

REL

STATE OF MINNESOTA

DISTRICT COURT

COUNTY OF HENNEPIN

FOURTH JUDICIAL DISTRICT

State of Minnesota, by the
Minnesota Pollution Control
Agency,

Plaintiff,

Court File No. 670767

and

City of St. Louis Park,

Intervenor-Plaintiff

vs.

Reilly Tar & Chemical
Corporation,

Defendant and
Third-Party Plaintiff,

vs.

City of St. Louis Park,

Third-Party Defendant.

US EPA RECORDS CENTER REGION 5



514985

INTERROGATORIES TO DEFENDANT
REILLY TAR & CHEMICAL
CORPORATION (SET I) AND
RESPONSES THERETO

CORPORATIONS

INTERROGATORY NO. 1:

For each of the following entities, state the place, date of incorporation, the period of doing business in Minnesota and the date(s) of any merger, acquisition of assets or stock of one corporation by another:

- (a) Reilly Tar and Chemical Corporation;
- (b) Char Products Company, Inc.;
- (c) Republic Creosoting Company.

Response to Interrogatory No. 1: Republic Creosoting Co.

was incorporated in Indiana on December 21, 1905. Char Products Co. was incorporated in Indiana on March 16, 1923 (the name was changed to Char Products Co., Inc. on December 2, 1960). Reilly Tar & Chemical Corp. was incorporated in Indiana on February 28, 1933. On January 1, 1961, Reilly Tar & Chemical Corp. and Char Products Co., Inc. were merged into Republic Creosoting;

the surviving corporation then changed its name to Reilly Tar & Chemical Corp.

The period of doing business in Minnesota was from sometime before 1914 to 1972, when operations ceased at the St. Louis Park plant.

- C. F. Leshner

INTERROGATORY NO. 2:

With regard to Reilly Tar and Chemical Corporation, Char Products Company, Inc. and Republic Creosoting Company, identify the following people, from the date of incorporation to the present:

- (a) The Chairman of the Board of Directors;
- (b) The members of the Board of Directors;
- (c) The Executive Officers;
- (d) The general manager of the Site.

Response to Interrogatory No. 2:

REILLY TAR & CHEMICAL CORPORATION

(up to 1/1/61 merger)

DIRECTORS

P. C. Reilly	1/17/34 to 1/22/52
Howard Kroehl	2/28/33 to 1/17/34
John A. Lawler	2/28/33 to 12/29/41
Robert J. Wechsler	2/28/33 to 1/1/61
Thomas E. Reilly	12/29/41 to 1/1/61
Carleton B. Edwards	1/22/52 to 1/1/61

OFFICERS

PRESIDENT

Howard Kroehl	2/28/33 to 1/17/34
P. C. Reilly	1/17/34 to 1/22/52
C. B. Edwards	1/22/52 to 1/1/61

VICE PRESIDENT

P. C. Reilly, Jr.	2/28/33 to 1/1/61
R. J. Wechsler	1/17/34 to 1/29/41
T. E. Reilly	12/29/41 to 1/1/61

SECRETARY

J. A. Lawler	2/28/33 to 1/29/41
R. J. Wechsler	1/29/41 to 1/1/61

TREASURER

R. J. Wechsler	2/18/33 to 1/17/34
R. A. Lawler	1/17/34 to 1/29/41
R. J. Wechsler	1/29/41 to 1/22/52
P. C. Reilly, Jr.	1/22/52 to 6/2/59
T. E. Reilly	6/2/59 to 1/1/61

DIRECTORS (after 1/1/61 Merger)

CHAIRMAN

C. B. Edwards	1/1/61 to 5/22/69
P. C. Reilly, Jr.	5/9/74 to 5/10/76
T. E. Reilly	5/10/76 to date

VICE CHAIRMAN

P. C. Reilly, Jr.	5/10/76 to date
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DIRECTORS

C. B. Edwards	1/1/61 to 5/22/69
T. E. Reilly	1/1/61 to *
P. C. Reilly, Jr.	1/1/61 to *
G. A. Reilly	5/11/61 to 9/11/69
R. J. Boyle	5/13/65 to 5/9/74
T. J. Ryan	5/22/69 to 5/4/81
R. E. McAdams	5/9/74 to *
T. E. Reilly, Jr.	5/9/74 to *
C. F. Leshner	12/3/80 to *
R. L. Reilly	12/3/80 to *
J. H. Heed	5/4/81 to *

* Present Directors

OFFICERS (from Merger 1/1/61)

PRESIDENT

P. C. Reilly, Jr.	1/1/61 to 5/9/74
T. E. Reilly	5/9/74 to 5/10/76
T. J. Ryan	5/10/76 to 3/13/81
T. E. Reilly, Jr.	3/13/81 to date

VICE PRESIDENTS

T. E. Reilly	1/1/61 to 5/9/74
G. A. Reilly	8/2/61 to 9/11/69
T. J. Ryan	5/14/70 to 5/9/74
L. W. Boyer	5/14/70 to 5/9/74
F. E. Cislak	5/14/70 to 5/9/74
T. E. Reilly, Jr.	5/9/74 to 3/13/81
R. E. McAdams	5/12/77 to date
C. F. Leshner	5/12/77 to date
W. R. Wheeler	5/12/77 to 1/31/81
R. Polack	6/17/81 to date

EXECT. VICE PRESIDENTS

T. E. Reilly	5/14/70 to 5/9/74
T. J. Ryan	5/9/74 to 5/10/76

SECRETARY

R. J. Wechsler	1/1/61 to 5/13/65
R. J. Boyle	5/13/65 to 5/9/74
R. E. McAdams	5/9/74 to date

TREASURER

T. E. Reilly	1/1/61 to 5/9/74
T. J. Ryan	5/9/74 to 5/10/76
R. E. McAdams	5/10/76 to 6/17/81
D. L. Henry	6/17/81 to date

REPUBLIC CREOSOTING COMPANY

(up to 1/1/61 merger)

DIRECTORS

P. C. Reilly	12/21/05 to 1/22/52
James Broden	12/21/05 to 12/2/07
Ineva T. Reilly	12/21/05 to 12/6/20
Robert F. Peele	12/2/07 to 5/5/08
Fred Shumaker	12/7/08 to 12/3/17
A. J. Lauth	12/3/17 to 3/10/28
R. J. Wechsler	12/15/22 to 12/5/60
Richard L. Talbot	12/6/20 to 12/15/22
C. B. Edwards	1/22/52 to 1/1/61
P. C. Reilly, Jr.	3/10/28 to 12/3/28
	12/5/60 to 1/1/61
John A. Lawler	12/3/28 to 12/29/41
T. E. Reilly	12/29/41 to 1/1/61

PRESIDENT

P. C. Reilly	12/21/05 to 1/22/52
C. B. Edwards	1/22/52 to 6/2/59

VICE PRESIDENT

Ineva T. Reilly	12/21/05 to 5/6/08
Fred Shumaker	5/6/08 to 12/3/17
Ineva T. Reilly	12/3/17 to 12/6/20
R. L. Talbot	12/6/20 to 12/15/22
R. J. Wechsler	12/15/22 to 12/29/41
P. C. Reilly, Jr.	12/2/35 to 1/1/61
Thomas E. Reilly	12/29/41 to 1/1/61

SECRETARY

James Broden	12/21/05 to 12/9/07
Ineva T. Reilly	12/9/07 to 12/10/07
Robert F. Peele	12/10/07 to 5/5/08
Ineva T. Reilly	5/6/08 to 12/3/17
Alphous J. Lauth	12/3/17 to 3/10/28
John A. Lawler	3/10/28 to 12/29/41
R. J. Wechsler	12/29/41 to 1/1/61

TREASURER

James Broden	12/21/05 to 12/9/07
Ineva T. Reilly	12/9/07 to 12/10/07

Robert F. Peele	12/10/07 to 5/5/08
Ineva T. Reilly	5/6/08 to 12/3/17
Alphous J. Lauth	12/3/17 to 3/10/28
John A. Lawler	3/10/28 to 12/29/41
Robert J. Wechsler	12/29/41 to 1/22/52
Peter C. Reilly, Jr.	1/22/52 to 6/2/59
Thomas E. Reilly	6/2/59 to 1/1/61

CHAR PRODUCTS COMPANY

DIRECTORS

3/16/23	F. J. Krieg, W. C. Horner and W. H. Kelley
3/10/24	John J. Wanner, Robert J. Wechsler and A. J. Lauth
3/15/28	P. C. Reilly, R. J. Wechsler and John A. Lawler
3/10/41	P. C. Reilly, R. J. Wechsler and T. E. Reilly
1/22/52	C. B. Edwards, R. J. Wechsler and T. E. Reilly
3/7/60	P. C. Reilly, Jr., R. J. Wechsler and T. E. Reilly

OFFICERS

PRESIDENT

3/16/23	W. C. Horner
3/10/24	John J. Wanner
3/8/26	R. J. Wechsler
2/1/28	P. C. Reilly
1/22/52	C. B. Edwards
3/7/60	P. C. Reilly, Jr.

VICE PRESIDENT

3/16/23	F. J. Krieg
3/10/24	R. J. Wechsler
3/8/26	NO VICE PRESIDENT
2/1/28	R. J. Wechsler
3/10/41	T. E. Reilly

SECRETARY

3/16/23	W. H. Kelley
3/10/24	A. J. Lauth
2/1/28	J. A. Lawler
3/10/41	R. J. Wechsler

TREASURER

3/16/23	NONE
3/10/24	A. J. Lauth
2/1/28	J. A. Lawler
3/10/41	R. J. Wechsler
3/7/60	T. E. Reilly

General Manager of St. Louis Park Site

A. E. Larkin	Purchase to 1952
H. L. Holstrom	1952 - 1960
H. L. Finch	1960 - closing

- C. F. Leshner

INTERROGATORY NO. 3:

State when the Board of Directors for Reilly Tar and Chemical Corporation, Char Products Company, Inc. and Republic Creosoting Company met, with regard to environmental affairs (including waste disposal and the control of water and air pollution) and/or met with regard to communications with federal, state or local units of government, and provide the minutes for each such meeting.

Response to Interrogatory No. 3: The Board of Directors did not deal with pollution control or environmental matters per se. Some members of the Board, however, were also members of the Finance Committee which reviewed and approved all major capital expenditures through work order requests submitted by the plants. All existing work order requests and approvals have been provided (e.g., Document Numbers 200,000 - 202,591).

- R. Polack

OWNERSHIP AND OCCUPANCY OF THE SITE

INTERROGATORY NO. 4:

Describe in detail the ownership and occupancy of the Site and the Ponding Area, including:

- (a) The date when Reilly began its activities at the Site and the nature of those activities;
- (b) The date when Reilly ceased its activities at the Site;
- (c) The date when Reilly vacated the Site;
- (d) The fair market value of the Site at the time of sale to the Authority, the identity of the person(s) making the valuation and the basis or method of valuation.

Identify all previous occupants of the Site, or portions of the Site, including all previous owners and all previous tenants, the dates of their ownership and/or occupancy, identification of the land owned and/or occupied and the activities conducted on the land during the ownership and/or occupancy.

Response to Interrogatory No. 4: Reilly Tar & Chemical Corp. is not aware of the ownership or occupancy of the Ponding Area. With respect to the Site, the following information is provided:

- (a) St. Louis Park plant property was purchased November 11, 1915. The refinery and treating plant were built between 1917-23.
- (b) Last employees were dismissed in July 1972.
- (c) Possession according to the purchase agreement was to be transferred on October 2, 1972.
- (d) Fritz Brandenburg appraisal report to the City of St. Louis Park valued the property at \$2,136,300.

Prior owners of the Site:

George Volk and Olive P. Simmers (widow of Edward P. Simmers); Minnesota Sugar Co. (see documents 10703-10710); Heirs of Harriet Walker (see documents 10384-10385); Glen Martz (see document 10399)

- C. F. Leshner

INTERROGATORY NO. 5:

Describe in detail the physical condition of the Site and the Ponding Area at the time Reilly purchased the Site, including but not limited to the following:

- (a) The location and appearance of all ditches, trenches, culverts, cisterns, basins and/or ponds;
- (b) The precise location of wells and the quality of water taken from the wells;
- (c) The drainage characteristics and topography or contours of the land surface;
- (d) The existence of wastes, contaminants and pollutants on or beneath the land surface and/or in the surface water or groundwater.

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Response to Interrogatory No. 5: Any information known about the physical condition of the site at the time it was purchased is described in documents provided (e.g., document numbers 10,000 - 10,808).

- R. Polack

INTERROGATORY NO. 6:

Describe in detail the drainage characteristics and topography of the Site and the Ponding Area during the period while Reilly was conducting activities at the Site. Identify all ditches and other locations where surface water and wastes flowed across and off the Site. State whether Reilly altered the topography of the Site and/or the Ponding Area; for example, by doing earthmoving activities, including the excavation, depositing and moving of soil or other fill, and if so, state when and how extensive the activity was and the purpose for the activity.

Response to Interrogatory No. 6: When Reilly was conducting activities at the site, the topography was essentially a flat piece of land with the North end being approximately ten (10) feet higher than the South end. There was one low hill on which the plant office was built.

Generally surface water flowed from the North, East, and West sides of the plant toward the South. Industrial waste water flowed through an 8" vitrified tile from a drain at the North end of the Refinery building to a sump at the North of the oil-water separator; and through a 6" vitrified tile pipe to catch any overflow from the sumps at the treating cylinders; and through a four (4) inch tile from the drain in the Tank house. The waste water was pumped from the receiving sump to the oil-water separator.

Oil recovered from the separator was pumped to a decanting tank at the treating plant. The waste water flowed through an 8" vitrified tile sewer to a straw filter located near the Southwest corner of the plant.

Effluent from the straw filter left the plant by flowing through a pipe under Walker Street.

Reilly did not substantially alter the topography of the site or the Ponding Area.

- R. J. Hennessy

INTERROGATORY NO. 7:

Describe in detail the demolition of the Site at the time Reilly vacated the Site, including the destruction, dismantling, removal, filling or abandonment of buildings, tanks, trenches, dikes, basins, wells, structures and facilities. Include the following information in the description of the demolition activities:

- (a) With regard to the removal of any material from the Site, including but not limited to soil, sludges and waste residuals, state the total amount (by volume and weight) and identify the location of final disposal;
- (b) With regard to the structures, facilities and wastes left on the Site, identify the location of the disposal on the Site and identify what was disposed of at that location;
- (c) Describe the contours of the Site before demolition activities began, any changes in the contours during the course of the demolition, and the final contours of the Site;
- (d) State whether Reilly was granted any permit, license, permission or approval by any governmental entity to conduct its demolition activities at the Site, and if so, identify the governmental entity and the date and nature of the approval.

Response to Interrogatory No. 7: Any information about the demolition of the site is included in documents provided (e.g., numbers 300,000 - 304,518; 10,000 - 10,808).

- R. Polack

ENVIRONMENTAL AFFAIRS

INTERROGATORY NO. 8:

Identify all persons who had authority to approve or veto environmental, waste disposal, or pollution control expenditures proposed, planned or carried out at

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the Site, or the Ponding Area; as well as those who now have authority to approve or veto expenditures for remedial measures to abate the existing pollution condition. For each such person:

- (a) Define the relationship of the person to Reilly; and
- (b) Identify all documents which describe the relationship between the person and Reilly.

Response to Interrogatory No. 8: Prior to his death in 1952, all major capital expenditures were approved or vetoed by Mr. P. C. Reilly, generally after having been proposed and/or planned by the Plant Manager and the Chief Engineer.

Between 1952 and 1969, they would have been proposed and/or planned by the Plant Manager, the Chief Engineer and the Refinery Production/General Manager and approved or vetoed by Mr. T. E. Reilly, Mr. P. C. Reilly, Jr., and/or Mr. C. B. Edwards.

After 1969 the approval or veto would have been by the Finance Committee.

The Plant Manager chronology is listed in the Response to Interrogatory No. 2.

The Chief Engineer was Mr. H. R. Horner to 1972 and Mr. R. J. Hennessey, 1972 to 1980.

The Refinery Production or General Managers were Dr. F. J. Mootz to 1963 and Mr. C. F. Leshner, 1963 to date.

The Republic Creosoting Division General Managers were Mr. T. E. Reilly, 1952-1961, Mr. G. A. Reilly, 1961-1969, and Mr. L. W. Boyer, 1969-1974.

The Plant Managers would have carried out all changes and improvements and could have proceeded without approval with minor expenditures (less than several hundred dollars).

- C. F. Leshner

INTERROGATORY NO. 9:

Identify the person or persons who had responsibility for managing Reilly's environmental affairs, including waste disposal and the control of water and air pollution, and identify all employees who were responsible within the Corporation for determining the location at which a particular load, quantity, or type of waste would be disposed of or who would have knowledge of such disposal.

Response to Interrogatory No. 9: In general, during the period of occupancy of the St. Louis Park site, the Plant Manager would have managed and directed the local environmental affairs, seeking advice or direction when needed, from Mr. P. C. Reilly, the Chief Engineer and/or the General Manager.

The Plant Manager would have been responsible for specific details of waste disposal.

- C. F. Leshner

INTERROGATORY NO. 10:

State whether Reilly now has, or has ever had, written procedures, policies, requirements or guidelines used, considered or available for use in considering or determining whether to install, purchase, or invest in pollution control equipment at the Site. If so, state such procedures, policies, requirements or guidelines and identify the documents in which they are contained. If no such procedures, policies, requirements or guidelines exist, or have existed, describe how Reilly has considered and decided whether to install pollution control equipment, including identification of all persons involved and of all information collected, developed or analyzed relating to Reilly's decisions or deliberations.

Response to Interrogatory No. 10: No written procedures, policies, requirements or guidelines exist with respect to the Site.

The St. Louis Park Plant supervisory personnel, the corporate engineering staff personnel and company management would have collected, developed and analyzed information from their education and training, from contacts with others in the tar refining, wood preserving

and associated industries, and from trade and technical journals.

- C. F. Leshner

PERMITS AND LICENSES

INTERROGATORY NO. 11:

State whether Reilly has been issued or denied any permits or licenses regarding the Site by any federal agency pursuant to environmental, transportation, health or other laws or regulations and, if so, state:

- (a) Name of agency or agencies;
- (b) Date(s) of such issuance or denial;
- (c) The permit or license application date and the number or other identifier; and,
- (d) Purpose of the issuance of each such permit or license.

Include an identification of all applications made and withdrawn prior to action by the Agency.

Response to Interrogatory No. 11: Reilly Tar & Chemical Corp. is unable to locate any such permits, licenses, or applications.

- W. Justin

INTERROGATORY NO. 12:

State whether Reilly has been issued or denied any permits or licenses regarding the Site by any State of Minnesota agency, pursuant to environmental, transportation, health, building or other laws or regulations, and if so, state:

- (a) Name of agency or agencies;
- (b) Date(s) of such issuance or denial;
- (c) The permit or license application date and the number or other identifier; and,
- (d) Purpose of the issuance of each such permit or license.

Include an identification of all applications made and withdrawn prior to action by the Agency.

Response to Interrogatory No. 12: Reilly Tar & Chemical Corp. is unable to locate any such permits, licenses, or applications.

- W. Justin

INTERROGATORY NO. 13:

State whether Reilly has been issued or denied any permits or licenses by any regional county or municipal agency, including the City and the Commission, regarding the Site, pursuant to environmental, transportation, health, building or other laws, ordinances or regulations, and if so, state:

- (a) Name of agency or agencies;
- (b) Date(s) of such issuance or denial;
- (c) The permit or license application date and the number or other identifier; and,
- (d) Purpose of the issuance of each such permit or license.

Include an identification of all applications made and withdrawn prior to action by the Agency.

Response to Interrogatory No. 13: See documents 301880, 301887, 303986, 301574, 302219, 302097, 301567, 301854, 302085, 301846, for environmental. Reilly Tar & Chemical Corp. is unable to locate any permits, licenses or applications with respect to other agencies.

- W. Justin

SOURCES AND USES OF WATER

INTERROGATORY NO. 14:

Describe in detail the sources of the water used at the Site, as well as all the uses of water at the Site.

Response to Interrogatory No. 14: Sources of water used at the site were a well drilled in 1918 and used until 1958 and city water.

City water and well water were used for condensing vapors and cooling products. City water was also used for sanitary purposes such as showers, drinking fountains, and sanitary facilities.

- R. J. Hennessy

INTERROGATORY NO. 15:

For each well on the Site, including well(s) that were used and wells that were not used by Reilly as a source of supply, state the following:

- (a) The State appropriation number for water withdrawal;
- (b) The precise location of the well;
- (c) The name of the well driller;
- (d) The date of original construction of the well;
- (e) The method of construction;
- (f) The material used for construction;
- (g) The depth of the well, including the depth of the casing;
- (h) The type and capacity of pump installed in the well;
- (i) The date and nature of any maintenance or reconstruction of the well and/or the pump;
- (j) The period(s) when water was withdrawn from the well;
- (k) The amount, on a calendar year basis, of water pumped from each well;
- (l) The specific use(s) of water pumped from the well;
- (m) A description of the appearance, odor and other characteristics of the water as drawn from the well;
- (n) An identification of the results of any chemical analyses of water withdrawn from the well, including the date of sampling, the sampling method (i.e., 24 hour composite or instantaneous) and the analytic methodology used;
- (o) The amount of water disposed of, on a calendar year basis, into the well, the date of each disposal incident and the purpose for the disposal;
- (p) The method of abandonment of the well, including the date of abandonment;
- (q) A description of any housing, shelter or protection for the well, including anything built to prevent surface runoff from entering the well.

Response to Interrogatory No. 15: See Appendix F.

GENERAL

INTERROGATORY NO. 16:

Identify all blue prints, flow charts, technical drawings, photos, diagrams, measurements, surveys, engineering sketches, and other documents which depict the coal tar refining and wood preserving processes done at the Site, as well as the storage of treated wood on the Site. Include a flow diagram of the processes from their inception and indicate the date, nature and reason for any subsequent changes in the processes until Reilly ceased its activities at the site.

Response to Interrogatory No. 16: Attached as Appendix A is an index identifying all blue prints, technical drawings, surveys, etc. for the St. Louis Park, Minnesota plant.

Attached as Appendix B is the probable flowsheet for the tar refining operation in the 1920's and 1930's. CL

Attached as Appendix C is the probable flowsheet for the tar refining operation in the 1930's. CL

Attached as Appendix D is the flowsheet for the tar refining operation in the 1960's. CL

Attached as Appendix E is the flowsheet for the timber creosoting operation from 1920 to 1970. RJH

Various treatment processes differing in details were used at the St. Louis Park plant, but the general method of handling is the same in all cases.

All photos have been produced.

- R. J. Hennessy

RAW MATERIALS

INTERROGATORY NO. 17:

For each raw material used in the coal tar refining and wood preserving processes at the Site, including but not limited to coal tar, state the following:

- (a) The chemical composition of each material;
- (b) For each calendar year, the supplier(s) of the material;

- (c) The form of the material as purchased (i.e., solid, powder, semi-solid or liquid) and its intended or actual uses;
- (d) Method of transport to the Site;
- (e) For each calendar year, state the following:
 - (1) the amount of raw material received at the Site;
 - (2) the amount used in the course of the coal tar refining and wood preserving processes;
 - (3) the amount of raw material not used in the course of the coal tar refining and wood preserving processes and how this raw material was otherwise used by Reilly or how Reilly stored or disposed of the raw material.

Response to Interrogatory No. 17:

- (a) Coal Tar is a mixture of a large number of organic compounds chiefly isocyclic and heterocyclic organic compounds. Estimates of the number are as high as 10,000 although only about 300 have so far been isolated. A typical elemental analysis would be 90.8% carbon, 5.4% hydrogen, 1.6% oxygen, 1.4% nitrogen, 0.6% sulfur and 0.1% ash. The products produced by the crude distillation at the plant were crude subdivisions of the mixture, generally differentiated by boiling range. The fractions themselves, however, were multi-component mixtures except for the following: Into the 1940's the plant distilled the tar completely to a coke, characterized from most cokes by a higher carbon, lower ash content. And, the by-products operation during that same period produced a crude naphthalene oil and

crude mixture of tar acids, both of which were shipped out for further refining.

Early, before 1940, the plant treated some wood with a ZnCl_2 solution (2-3%). And in later years some of the wood treatment was a petroleum/creosote solution, the petroleum being similar in nature and chemistry to a residual fuel oil.

- (b) No complete supplier lists are available other than at times tar was purchased from the following:

Key City Gas Company
Ford Motor Company
Carnegie Illinois Steel Company
City of Cedar Falls Gas Company
Water Light Sinking Fund Company
Peoples Power Company
Interstate Power Company
Lake Superior District Power Company
Michigan Gas & Electric Company
American Tar Products Company
Barrett Company
Fuel Oil Corp.
American Tar & Chemical Company
Wisconsin Hydroelectric Company
Wisconsin Fuel & Light Company
West End Iron & Metal Corp.
Northern States Power Company
Koppers Products Company
Northern Indiana Public Service Co.
Central Illinois Electric & Gas Co.
Minneapolis Gas Light Company
Des Moines Gas Co.
Youngstown Sheet & Tube Company
Sioux City Gas & Electric Company
Iowa Public Service Company
Inland Steel Company
E. I. DuPont De Nemours & Co.
Ottumwa Gas Company
Illinois Northern Utilities Company
Iron Mountain Gas Company
Illinois Power & Light Company
U.S. Steel Corp.

- (c) Coal Tar is a semi-solid-liquid, generally requiring heat to reduce the viscosity for pumping.

- (d) Transport was by tank-car and trailer truck.

(e) Actual tar purchases are available for the two following periods.

1934-51		1959-71	
Tar-1000 Gal.		Tar-1000 Gal.	
1934	1829	1959	6050
1935	3465	1960	5915
1936	4844	1961	3319
1937	4726	1962	3218
1938	1523	1963	3776
1939	3234	1964	4585
1940	2301	1965	5354
1941	4240	1966	5824
1942	5250	1967	4977
1943	4902	1968	4871
1944	5140	1969	5591
1945	5874	1970	4380
1946	4424	1971	2732
1947	3664		
1948	2423		
1949	2667		
1950	2275		
1951	2365		

We believe all the tar purchases were used in refining, wood preserving, or road tars except for unaccounted or unknown losses, which were not relatively significant.

- C. F. Leshner

INTERROGATORY NO. 18:

For any raw material disposed of by Reilly, either at the Site or off the Site, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) The chemical composition of the raw material disposed of and the supplier of the material;
- (c) How disposal occurred;
- (d) The location of the disposal, including reference to any wells, ponds, basins, ditches and trenches;
- (e) The equipment, if any, used to accomplish the disposal;
- (f) The total amount (by volume and weight) of material disposed of;
- (g) The identity of any governmental entity to whom the disposal was reported, the date and

manner of such notification and the identity of the official so notified;

- (h) The details of the clean-up or recovery effort, if any;
- (i) The total amount of material recovered and its ultimate disposition;
- (j) The identity of the persons with knowledge of the facts of any such disposal incident.

Response to Interrogatory No. 18: Little data is available on disposal, except as would have been noted on Document 103221, where the cistern was cleaned and the sludge used in the tie yard, probably as a stabilizer or binder, instead of road tar.

- C. F. Leshner

TRANSPORTATION OF COAL TAR TO THE SITE

INTERROGATORY NO. 19:

Describe in detail the method of transport of coal tar to the Site and the method of transferring the coal tar into storage at the Site. Include the date, nature and reason for any change(s) in the method of transport. If transport was by railcar, identify the rail carrier(s) and the type of rail cars used. If transport was by truck, identify the truck carrier(s) and type of truck used.

Response to Interrogatory No. 19: No specific details are available. Coal tar probably would have been delivered by tank truck and/or tank cars; we would expect both to have been used. Both tank trucks, and the tank cars after heating with steam, would have been hooked to pumps and a piping system with hose or pipe connections and pumped to the tar storage tanks. Probably in some cases, they were drained by gravity thru pipes into the tar cistern.

- C. F. Leshner

INTERROGATORY NO. 20:

State whether there were any safeguards, including diking systems, to prevent the disposal of coal tar as it was transferred to storage at the Site, and if so, identify the safeguards, including diking systems, used to prevent the disposal of coal tar.

Response to Interrogatory No. 20: There was no diking system at the St. Louis Park Plant.

Prevention of disposal of coal tar as it was transferred from tank cars to storage at the site was accomplished by trenches which drained by gravity to the tar vat, or in other areas, to sumps from where it was pumped to tanks. The most important method of prevention of disposal was precautionary operating practices without which no disposal prevention method will work.

- R. J. Hennessy

INTERROGATORY NO. 21:

State whether there was any disposal of coal tar within five miles of the Site, or at the Site, and if so, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) How disposal occurred;
- (c) The location of the disposal, including reference to any wells, ponds, basins, ditches and trenches;
- (d) The equipment, if any, used to accomplish the disposal;
- (e) The total amount (by volume and weight) of the coal tar disposed of;
- (f) The details of clean-up or recovery efforts, if any;
- (g) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (h) The total amount of coal tar recovered and its ultimate disposition;
- (i) The identity of the persons with knowledge of the facts of any such incident.

Response to Interrogatory No. 21: See Response to Interrogatory No. 18.

- C. F. Leshner

COAL TAR STORAGE

INTERROGATORY NO. 22:

Describe in detail the storage of coal tar at the Site. Include the date, nature and reason for any change(s) in the storage of coal tar. Identify the precise location of storage, the type of container used (cistern, impoundment, lagoon, or other); specify its capacity; describe its design and construction, including any cover and/or lining.

Response to Interrogatory No. 22: Coal tar was stored in a 308,700 gallon capacity concrete vat 100 ft x 60 ft. The vat consisted of four concrete walls and a concrete floor the top of which was approximately four (4) ft. above grade. A wood roof covered the vat. Because of deterioration, the roof was removed in the late 1960's.

At various times, tanks 1 to 10 were used for the storage of tar and oil. Contents varied, and none of the tanks was dedicated to the storage of tar exclusively, but the tanks were used as needed and as available as the tar supply fluctuated. Following are the sizes of the tanks:

Tank No.	Capacity
1	47,000
2	100,000
3	500,000
4	250,000
5	250,000
6	250,000
7	100,000
8	100,000
9	50,000
10	50,000

- R. J. Hennessy

INTERROGATORY NO. 23:

State whether there were any safeguards to prevent the disposal of coal tar from storage, and if so, identify the safeguards used to prevent the disposal of coal tar from storage.

Response to Interrogatory No. 23: See Response to Interrogatory No. 20.

-R. J. Hennessy

INTERROGATORY NO. 24:

State whether there was any procedure or any equipment used to detect or determine the disposal of coal tar from storage, and if so, identify the procedure and/or equipment used to detect or determine the disposal of coal tar from storage.

Response to Interrogatory No. 24: We are not aware of any detection equipment other than visual observation.

Generally, a monthly inventory based on guages of the tanks would have been taken and a monthly proof of inventory or balance made, based on those guages and guages taken during transfers of material or production operations.

- C. F. Leshner

INTERROGATORY NO. 25:

State whether there was any disposal of coal tar from storage, and if so, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) How disposal occurred;
- (c) The location of the disposal, including reference to any wells, ponds, basins, ditches and trenches;
- (d) The equipment, if any, used to accomplish the disposal;
- (e) The total amount (by volume and weight) of the coal tar disposed of;
- (f) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (g) The details of clean-up or recovery efforts, if any;
- (h) The total amount of coal tar recovered and its ultimate disposal;
- (i) The identity of the persons with knowledge of the facts of any such incident.

Response to Interrogatory No. 25: See Response to Interrogatory No. 18.

- C. F. Leshner

INTERROGATORY NO. 26:

Describe in detail how coal tar was moved from the area where it was stored to the area where it was refined. Include the date, nature and reason for any change(s) in the method of movement of coal tar from the area where it was stored to the area where it was refined.

Response to Interrogatory No. 26: Coal tar was pumped from tar storage to the stills through pipelines. This method was used from the origin of the plant.

- R. J. Hennessy

INTERROGATORY NO. 27:

State whether pipes were used, in whole or in part, as a means to move the coal tar from storage to the area where the coal tar was refined, and if so, state the following:

- (a) When pipes were used;
- (b) The length and diameter of the pipes;
- (c) The material used to construct the pipes;
- (d) The location of the pipes;
- (e) Whether the pipes were heated, and if so, by what method and to what temperature;
- (f) Whether the pipes were located above or below the surface of the ground, including the distance above or below the surface of the ground;
- (g) The type, construction and condition of trench(es) or casing(s) for the pipes;
- (h) Whether the pipes, trench(es) or casing(s) were subject to periodic flooding. If so, state when the flooding occurred, as well as the duration and the effects of any flooding, including whether there was any leakage into the lines;
- (i) Whether the pipes, trench(es) or casing(s) were affected by freezing conditions. If so, state when the freezing occurred, as well as the duration and the effects of any such freezing;
- (j) Whether the pipes, trench(es) or casing(s) were investigated, tested, or evaluated by Reilly, or anyone else; and if so, who made the investigation, test or evaluation, what procedure was followed and how often was it done, and what results were obtained;

- (k) The identity of any breaks or ruptures in the pipes and the date(s) of such occurrence(s);
- (l) Whether the pipes or casings were replaced or repaired, or the trench(es) were repaired, and if so, the dates and the reasons for the replacement or repair.

Response to Interrogatory No. 27:

- (a) Pipes were always used (the only method) to transport tar from the storage tanks to the refinery.
- (b) They varied in size from 1½" to 6" in diameter and were of varying length, the longest being about three hundred (300) ft.
- (c) All pipes were made of steel.
- (d) In concrete trenches between the storage area and the refinery.
- (e) Pipes were preheated by blowing steam through them prior to pumping.
- (f) They were below ground approximately 18".
- (g) The pipe trenches had concrete walls and bottom and creosoted wooden tops. The condition of the trenches varied from excellent when installed to poor when we began abandoning them in 1967 and rerouting the piping above ground.
- (h) The trenches were subject to periodic flooding when the Refinery area became flooded during heavy rains. After Louisiana Avenue was repaved and curbed in 1955 and the storm water discharged into the plant, the frequent flooding caused the trenches to eventually become filled with sand and silt covering the piping and making inspection and repair difficult.

- (i) Freezing and thawing of this water-logged material accelerated the deterioration of the concrete trenches.
- (j) Maintenance records showing who inspected the trenches and when are no longer available.
- (k) We do not know of any breaks or ruptures.
- (l) In 1968-70, the piping was removed from the trenches and run just above the ground. The trenches were then filled with sand and gravel.

- R. J. Hennessy

INTERROGATORY NO. 28:

State whether there was any procedure or any equipment used to detect or determine the disposal of coal tar in the course of its movement from storage to the place of refinement, other than as detailed in the answer to the preceding interrogatory, and if so identify the procedure and/or equipment used to detect or determine the disposal of coal tar in the course of its movement from storage to the place of refinement.

Response to Interrogatory No. 28: See Response to Interrogatory No. 24. No other data is available.

- C. F. Leshner

INTERROGATORY NO. 29:

State whether there was ever a disposal of coal tar in the course of its movement from storage to the place of refinement, and if so, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) How disposal occurred;
- (c) The location of the disposal, including reference to any wells, ponds, basins, ditches and trenches;
- (d) The equipment, if any, used to accomplish the disposal;
- (e) The total amount (by volume and weight) of the coal tar disposed of;

- (f) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (g) The details of clean-up or recovery efforts, if any;
- (h) The total amount of coal tar recovered and its ultimate disposal;
- (i) The identity of the persons with knowledge of the facts of any such incident.

Response to Interrogatory No. 29: No data is available.

- C. F. Leshner

COAL TAR REFINING

INTERROGATORY NO. 30

Describe in detail all the processes by which coal tar was refined at the Site. Include the date, nature and reason for any changes in the processes.

Response to Interrogatory No. 30: The general coal tar processing principles remained the same throughout the plant's operation, except for several variations due to market conditions which will be noted.

Coal tar was received from suppliers in tank trucks and/or tank cars. The transport method would generally have been determined by distance and/or railroad trackage availability to the supplier. The tank cars, because of longer transit time and accompanying heat loss would usually have required steam heating through the car coils to reduce viscosity to make the material handleable. The material, after receipt and heating if required, would have been pumped to storage in tanks or piped, by gravity, to the tar cistern.

Coal tar is generally purchased and processed with a maximum water content of 2%. On settling in storage, some of this water (being lighter) may have separated to the surface and would be decanted (by visual observation) to the wastewater trenches.

The tar then would be pumped to stills. These were cylindrical vessels of about 5,000 gallons capacity, 7½ feet in diameter by 16' in length, set about 6' above the floor. Initially, into the 1950's, these were set and surrounded by fire brick and brick, with a fire box under the lower half. Fuel burners then fired into this firebox and the flue gases exited thru a flue to a common smoke stack. During and subsequent to the 1950's the firing method was changed so that the stills were fired internally thru 8 to 12" flue pipes thru the interior of the still which was insulated on the exterior, significantly improving the fuel efficiency. But also, these latter stills were not and could not be fired to produce pitch coke.

The tar in the still was heated by either of the above methods generating distillate and leaving pitch or coke in the still. The distillate was piped thru a vapor line to a condenser where it was liquified to a receiving tank, and to storage tanks. The distillate was separated into "cuts" or "fractions," the lighter materials evolving first, with the oils becoming progressively heavier as more were evolved. The differentiation of these cuts or fractions was accomplished by pumping from the receiving tank to specific and different storage tanks, based on specific gravity (or density) of the oil.

The first distillate evolved is "wet cut" or water, generally the 1-2% contained in the tar as received, and this distills when the tar in the still is at about 100°C. The second "cut" or light oil stream begins when the tar in the still is at about 160-180°C and the evolvment and distillate is generally continuous

thereafter, as the temperature of the material in the still is increased, with the cuts or separations being made, generally between light, medium and heavy oil. And, the number of cuts or amount of distillate removed would be determined or related to the "heavyness" of pitch or coke desired remaining in the still. The pitches would range from a road tar, only water and some light oil removed, thru roofing pitches, medium to hard pitches. At about 400°C, with about 55-60% of the tar removed as distillate, the pitch converts to pitch coke.

Early in the plant's history, into the 1930-1940's, there were markets, demands and needs for creosote oil, relatively little markets for pitch and some market for coke, so that distribution was most economic.

In and after the 1950's a market developed to the aluminum for hard pitch, which made coke production uneconomical.

During the 1920's and 30's there was a demand and market for tar acids and naphthalene. The by-products operation was built and operated to extract crude fractions of these materials from light oil, those crude fractions were then sent to other Reilly plants for refining.

The by-products operation would have involved the addition of sodium hydroxide solution to light oil, reacting the tar acids to form a sodium cresylate solution which was separated by gravity from the acid free light oil. The sodium cresylate solution would have been treated with sulfuric acid solution, separating by gravity into sodium sulphate solution and crude tar acid.

The acid free oils would have been chilled and allowed to cool; crude naphthalene salts would form and settle out. The drained, acid and naphthalene extracted oils would be returned for blending into creosote.

The by-products operation became uneconomical and was discontinued in 1930-40's.

During the 1920's and 30's, some water gas tars were being produced and purchased by Reilly. These are generally similar to coal tars except for being lighter, containing more distillate. Apparently the plant operated a "Unit #16", a still with auxiliary heating, intended to thermally "crack" the oils into higher boiling products, and to produce more creosote oil and/or pitch or coke. Water gas tar production declined over the years as natural gas became more available, and the belief is that it was phased out by the 1950's.

- C. F. Leshner

INTERROGATORY NO. 31:

For each and every process, identify all the equipment in the process and include for each piece of equipment the following:

- (a) The period of operation. If the equipment was replaced, repaired, or removed from use, state the dates and the reasons for the replacement, repair or removal from use;
- (b) The purpose and function of the equipment;
- (c) Identity (including make and model) of equipment and its operating parameters, including capacities, operating temperatures, pressure and the rated horsepower.

Response to Interrogatory No. 31:

- (a) See Response to Interrogatory No. 16 and Appendices B, C, D, and E. Changes in equipment were due to changes in market conditions and to technological changes and advances.

(b) The purpose of the tar refinery equipment was the separation of tar into various cuts controlled by the boiling range of each cut. The tar was distilled, condensed, and collected in receivers, and the different cuts were pumped from the receivers to the oil storage tanks. The residue in the stills was made into coke or any of the various pitches. The purpose of the timber creosoting operation was to preserve the wood from attack by low forms of plant life, insects, and marine borers.

(c) The equipment used in our plant was similar to that used in other plants in the industry. Some was adapted to fit particular needs. This was true of stills, condensers, receivers, creosoting cylinders, incising machine, pitch bays, etc.

Manufactured equipment not so adapted included items such as boilers, feed water heaters, cranes, adzing and boring machine, air compressors, saws, crushers, etc. See also Response to Interrogatory No. 16 and Appendix A.

- R. J. Hennessy

INTERROGATORY NO. 32:

Provide the chemical composition of all fractions produced in the coal tar refining processes, including but not limited to the chemical composition of the wet cut, creosote and pitch. For each fraction produced, state the total amount (by volume and weight), on a calendar year basis, of each fraction.

Response to Interrogatory No. 32: The fractions are mixtures of aromatic organic compounds, specified and differentiated by physical tests, i.e., boiling range, specific gravity, softening point, etc.

No data is available as to annual amounts.

- C. F. Leshar

INTERROGATORY NO. 33:

Identify all tests of the fractions produced in the coal tar refining processes at the Site, including but not limited to the wet cut, creosote and pitch.

Response to Interrogatory No. 33:

ASTM D 61 Test for Softening Point of Pitch

ASTM D 70 & D 71 Test for Specific Gravity of Pitch

ASTM D 2319-66 Test for Softening Point of Pitch

ASTM D 2317-66 Benzene Insoluble of Pitch

ASTM D 2318-66 Quinoline Insoluble of Pitch

ASTM D 2415-66 Ash Content of Pitch

ASTM D 2569-69 Distillation of Pitch

AWPA Standard Method for Analysis of Creosote

- W. Justin

INTERROGATORY NO. 34:

Describe in detail the process by which condenser water was used to liquify creosote oil and the other products of the refining processes. Include the following;

- (a) The source of the water;
- (b) How water was cooled, including the use of cooling ponds or cooling towers;
- (c) How make-up water was added to the process;
- (d) Detailed description of the disposal of the water.

Response to Interrogatory No. 34: Tar was heated in stills (direct fired) and the vapors were passed through a condenser consisting of a pipe coil in a pan of water. This cooled the vapors to their boiling point at which time they condensed and the oil was collected in receivers.

- (a) The source of water was wells or city water.
- (b) The water was cooled by returning it to a cooling pond.

(c) Make up water was added to the pond when the level became low. As hot water (170-175°F) was returned to the pond, evaporation was accelerated.

(d) Disposal of water was by evaporation from the pond.

- R. J. Hennessy

INTERROGATORY NO. 35:

State whether any creosote or other fraction or any other chemical or substance, ever mixed with the condenser water used in the refining processes, and if so, state the following:

- (a) The date of the occurrence;
- (b) How the mixing occurred;
- (c) Identify the specific process and the location in the process where the mixing occurred;
- (d) The total amount (by volume and weight) of the substance mixed with the condenser water, in addition to the total volume of the condenser water;
- (e) Describe how the substances were removed from the water and how and where the substances were disposed of.

Response to Interrogatory No. 35: The condensers were essentially a pipe coil immersed in a box of water. The piping was continuous from the still, through the vapor line and condenser coils into the receiving tank. We have no data concerning leaks in the piping.

- C. F. Leshner

INTERROGATORY NO. 36:

State whether there were any safeguards to prevent the disposal of the products or wastes of the refining process, and if so, identify the safeguards used to prevent the disposal of the products.

Response to Interrogatory No. 36: See Response to Interrogatory No. 20.

- C. F. Leshner

INTERROGATORY NO. 37:

State whether there was any procedure or equipment used to detect or determine the disposal of the products of the refining process, and if so, identify the procedure and/or equipment used to detect or determine the disposal of the products.

Response to Interrogatory No. 37: See Response to

Interrogatory No. 24.

- C. F. Leshner

INTERROGATORY NO. 38:

State whether there was any disposal of the products of the refining processes, including but not limited to wet cut, creosote and wet pitch, and if so, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) How disposal occurred;
- (c) Identify the location of the disposal, including reference to any wells, ponds, basins, ditches and trenches;
- (d) Identify the equipment, if any, used to accomplish the disposal;
- (e) The total amount (by volume and weight) of the product disposed of;
- (f) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (g) The details of clean-up or recovery efforts, if any;
- (h) The total amount of the product recovered and its ultimate disposal;
- (i) The identity of the persons with knowledge of the facts of any such incident.

Response to Interrogatory No. 38: We are not aware of any disposal except that separated water from the wet cut may have been drained into and through the wastewater disposal system.

- C. F. Leshner

INTERROGATORY NO. 39:

Describe in detail any further processing of the products of the coal tar refining processes at the Site,

including all the distilled fractions and the pitch. Include a description of all the equipment and facilities used in such processes in the detail required in Interrogatory No. 30. Also include the chemical composition of all such products and the total amount produced (by volume and weight) on a calendar year basis. Include the chemical composition of any additional materials used in the processes.

Response to Interrogatory No. 39: No further processing was done that was not referred to in the Response to Interrogatory No. 30.

- C. F. Leshner

STORAGE AND TRANSPORTATION OF THE PRODUCTS
OF THE COAL TAR REFINING PROCESSES

INTERROGATORY NO. 40:

Describe in detail the storage of the products from the coal tar refining process, including but not limited to the wastes. Include the date and the nature and reason for any change(s) in storage. Identify the precise location of storage and the types of containers used, specify their capacity, and describe their design and construction. Specify which container(s) was used for each product. Provide a description of the concrete flexicore supporting the pitch bays, including the design of the concrete flexicore, the materials used to construct the flexicore, its period of use, including the condition of the flexicore throughout the years of use.

Response to Interrogatory No. 40: See Responses to Interrogatories Nos. 20 and 30.

Steel pitch bays were supported by prestressed concrete beams resting on concrete block walls. The two bays inside the refinery had Flexicore units which were hollow cast with voids running lengthwise and were fabricated by a licensee of the Flexicore Co., Inc., Dayton, Ohio. The bay located in the pole barn had solid prestressed concrete beams cast in Minneapolis.

These bays were used from the time they were built in 1955 until the production of electrode pitch was discontinued in 1971.

Most of the prestressed precast concrete beams remained in good condition but some of the Flexicores

showed gradual deterioration where they rested on the concrete walls. These were repaired by supporting them alongside the walls by ties resting on the concrete footing.

The bays were in good condition when the plant was dismantled. Material to be stored was moved in by lift truck and stored on the bays until the plant was sold and shut down.

- R. J. Hennessy

INTERROGATORY NO. 41:

Describe in detail how the products of the coal tar refining process, including wastes, were moved from the storage area to the area of the wood preserving processes. Include the date, nature and reason for any change(s) in the method of movement from storage to the area of the wood preserving processes. Specify the distance between the area of storage and the area where the wood preserving processes were located.

Response to Interrogatory No. 41: All liquid materials from the coal tar refining process were moved to the area of wood preserving processes through pressure piping. The distance was approximately six hundred (600) feet.

- R. J. Hennessy

INTERROGATORY NO. 42:

Describe in detail how the products of the coal tar refining process, including wastes, were moved from the storage area to areas other than the area of the wood preserving processes, such as for use in other processes on the Site, for disposal on the Site, or for sale or disposal off the Site, or otherwise. Include the date, nature and reason for any change(s) in the method of movement of such coal tar refining products from storage. Specify the distance between the area of storage and the area(s) to which the products were moved.

Response to Interrogatory No. 42: Products of the coal tar refining process were generally moved through pipelines. This method was used from the origin of the plant.

- R. Polack

NO. 44

INTERROGATORY NO. 43:

State whether pipes were used, in whole or in part, to move the products of the coal tar refining process, and if so, state the following for each of the products:

- (a) When pipes were used;
- (b) The length and diameter of the pipes;
- (c) The material used to construct the pipes;
- (d) The location of the pipes;
- (e) Whether the pipes were heated, and if so, by what method and to what temperature;
- (f) Whether the pipes were located above or below the surface of the ground, including the distance above or below the surface of the ground;
- (g) The type, construction and condition of trench(es) or casing(s) for the pipes;
- (h) Whether the pipes, trench(es) or casing(s) were subject to periodic flooding. If so, state when the flooding occurred, as well as the duration and the effects of any flooding, including whether there was any leakage into the lines;
- (i) Whether the pipes, trench(es) or casing(s) were affected by freezing conditions. If so, state when the freezing occurred, as well as the duration and the effects of any such freezing;
- (j) Whether the pipes, trench(es) or casing(s) were investigated, tested or evaluated, by Reilly or anyone else, and if so, who made the investigation, test or evaluation, what procedure was followed and how often was it done, and what results were obtained;
- (k) Identify any breaks or ruptures in the pipes and the date(s) of such occurrence(s);
- (l) Whether the pipes or casing(s) were replaced or repaired, or the trenches were repaired, and if so, the dates and the reasons for the replacement or repair.

Response to Interrogatory No. 43: See Response to

Interrogatory No. 27.

- R. Polack

INTERROGATORY NO. 44:

State whether there were any safeguards, to prevent the disposal of the products of the coal tar refining process, including wastes either from storage or as the products were moved from storage, and if so identify the safeguards used to prevent disposal.

Response to Interrogatory No. 44: See Response to

Interrogatory No. 20.

- R. Polack

INTERROGATORY NO. 45:

State whether there was any procedure or any equipment used to detect or determine the disposal of the products of the coal tar refining process including wastes from storage or as they were moved from storage, and if so, identify the procedure or equipment used to detect or determine the disposal of the products of the coal tar refining process.

Response to Interrogatory No. 45: See Response to

Interrogatory No. 24.

- C. F. Leshner

INTERROGATORY NO. 46:

State whether there was any disposal of the products of the coal tar refining process, including wastes from storage or from the movement of the products from storage, and if so, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) How disposal occurred;
- (c) The location of the disposal, including any wells, ponds, basins, ditches and trenches;
- (d) Identify the equipment, if any, used to accomplish the disposal;
- (e) The total amount (by volume and weight) of the coal disposed of;
- (f) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (g) The details of clean-up or recovery efforts, if any;
- (h) The total amount recovered and its ultimate disposal;

- (i) The identity of the persons with knowledge of the facts of any such incident.

Response to Interrogatory No. 46: See Response to Interrogatory No. 18.

- C. F. Leshner

WOOD PRESERVING PROCESSES

INTERROGATORY NO. 47:

Describe in detail all the processes at the Site to preserve wood. Include the date, nature and reason for any changes in the processes.

Response to Interrogatory No. 47: The basic process did not change throughout the operation of the plant.

Untreated lumber, mostly cross ties, were brought into the plant and stacked in an area near the treating and woodworking machinery. White ties were usually stacked for seasoning northeast of the treating installation, and untreated poles and bridge timbers to the west.

Appreciably less area was used for the storage of treated ties than white ties as most of them were loaded into open top cars for outbound shipment immediately or a short time after treatment. Two areas were set aside for black ties and timber to be stored after treatment. One was at the extreme north side of the plant, and the other was at the extreme west side, both of which were remote from woodworking machinery and the treating cylinders.

After stacking for seasoning, an anti-splitting device was applied to both ends of each tie. After seasoning, the ties were machined (adzed and bored).

Fir timbers to be treated were incised to permit penetration of the preservative.

After machining, ties, timbers, poles, etc. were loaded on trams and pushed into one of three treating cylinders.

The pressure treatment process was used at St. Louis Park. Treating conditions were controlled so retention and penetration were varied to meet the requirements of service. Various pressure processes differ in details, but the general method of handling material is the same in all cases.

Three treating cylinders, 6 ft. diameter x 176 ft. long, were used at St. Louis Park. Each cylinder held 21 or less trams of ties depending on their length. Seven hundred and fifty-six 7 x 8 sawed ties could be treated per charge.

After charging, the cylinder was filled with hot preservative solution and then subjected to a vacuum. Vacuum evaporates water from the wood at a lower temperature, thereby preventing damage to the timber.

The vacuum is released, and pressure is applied to the hot preservative solution, 150 to 200 p.s.i., and is held until the specified absorption is obtained. Oil is then drained and a vacuum drawn to remove excess oil from the wood.

After treatment, the treated timber on the trams is pulled out of the cylinder into the yard for loading in open-top railroad cars for shipment or stacking in that portion of the yard set aside for the storage of treated ties.

The treating plant was serviced by six storage tanks, four approximately 47,000 gallons, one 35,000 gallons, and one 20,000 gallons. These tanks were used for the storage of preservative, the mixing of solutions of creosote and tar, and oil recovery. Oil escaping from the cylinder when the door was opened after treatment was

caught in a concrete sump and pumped to the settling tank for oil recovery.

Thirteen standard guage tracks, most of which were parallel to each other and spaced 116 ft. apart in the storage yard, were provided for the effective operation of cranes and the movement of railroad cars bringing in loads of timber and to pick up outgoing shipments of treated material. Eight narrow guage (24") tram tracks were located between the standard guage tracks so that the trams could be loaded directly from the seasoning stacks and pulled to the woodworking machines or to the creosoting cylinder.

The retention of oil in bridge timbers is usually 8 to 12 lbs. per cubic foot of wood, and for ties it is usually 6 to 12 lbs. The precise amount of oil was varied for different species, proportions of sapwood, and conditions of use. Piles to be used in salt water were creosoted to refusal with retentions of 20 to 25 lbs. per cubic foot in pine and 12 to 16 lbs. in Douglas fir.

- R. J. Hennessy

INTERROGATORY NO. 48:

For each and every process, identify all the equipment in the process and include for each piece of equipment the following:

- (a) The period of operation. If the equipment was replaced, repaired, or removed from use, state the dates and the reasons for the replacement, repair or removal from use;
- (b) The purpose and function of the equipment;
- (c) Identity (including make and model) of equipment and its operating parameters, including capacities, operating temperatures and pressures, and the rated horsepower.

Response to Interrogatory No. 48: See Response to Interrogatory No. 31.

- C. F. Lesher

INTERROGATORY NO. 49:

Describe in detail the steam cleaning of the cylinders used to impregnate wood, including the steam cleaning of the cylinders and whether the steam was part of an open or closed system. If an open system, include the following:

- (a) The period of operation;
- (b) The average volume of water used for each charge, as well as the average volume of water used each day;
- (c) A description of the disposal of the water used in the steam cleaning process;
- (d) Identification of any tests of the water disposed of.

If a closed system, include the following:

- (a) The period of operation;
- (b) The average volume of water used for each charge, as well as the average volume of water used in a day;
- (c) How any impurities or contaminants were removed from the processed water;
- (d) A description of the disposal of any impurities or contaminants from the processed water;
- (e) A description of the disposal of the water used in the steam cleaning process;
- (f) Identification of any tests of the water disposed of.

Response to Interrogatory No. 49: We are not aware the treating cylinders were steam cleaned.

- C. F. Leshner

INTERROGATORY NO. 50:

Provide the chemical composition of each of the substances, including but not limited to creosote, which were used to treat wood at the Site and state the period(s) when each substance was used.

Response to Interrogatory No. 50: The chemical composition is not definable. Creosote and creosote-coal tar solutions are mixtures of aromatic organic compounds, characterized by physical tests. The petroleum in

creosote-petroleum is similarly a mixture of mostly asepatic organic compounds characterized by physical tests. Zinc chloride was apparently used in earlier years, probably as a 2-3% solution.

- C. F. Leshar

INTERROGATORY NO. 51:

For each substance identified in Interrogatory No. 50 above, state the total amount (by volume and weight), on a calendar year basis, which was used in the treatment of wood.

Response to Interrogatory No. 51: Reilly has only the following data on creosote oil for the years 1951-71, which does not include petroleum supplied by the railroads.

<u>Year</u>	<u>Gallons (1000)</u>	<u>Year</u>	<u>Gallons (1000)</u>
1959	988	1966	1174
1960	1069	1967	1038
1961	1291	1968	1048
1962	1138	1969	1028
1963	1294	1970	1306
1964	1155	1971	936
1965	1226		

- C. F. Leshar

INTERROGATORY NO. 52:

On a calendar year basis, specify how many linear feet of wood were treated at the Site.

Response to Interrogatory No. 52: Reilly has only the following data for the years 1943-51.

<u>Year</u>	<u>Cubic feet of wood (1,000)</u>
1943	3141
1944	3803
1945	4252
1946	3595
1947	3247
1948	2496
1949	2014
1950	1961
1951	1420

- C. F. Leshar

INTERROGATORY NO. 53:

State whether there were any safeguard to prevent disposal, during the course of the wood treating

processes, of any substances, including creosote, and if so, identify the safeguards used to prevent disposal of any substances during the course of the wood treating processes.

Response to Interrogatory No. 53: See Response to Interrogatory No. 20.

- C. F. Lesher

INTERROGATORY NO. 54:

State whether there was any procedure or equipment used to detect or determine the disposal, during the wood treating processes, of any substances, including creosote, and if so, identify the procedure or equipment used to detect or determine the disposal of any substances.

Response to Interrogatory No. 54: See Response to Interrogatory No. 24.

- C. F. Lesher

INTERROGATORY NO. 55:

State whether there was any disposal, during the wood treating processes, of any substances, including but not limited to disposal of creosote, and if so, state the following for each disposal incident:

- (a) The date of such disposal;
- (b) How disposal occurred;
- (c) Identify the location of the disposal, including reference to any wells, ponds, basins, ditches and trenches;
- (d) Identify the equipment, if any, used to accomplish the disposal;
- (e) The total amount (by volume and weight) disposed of;
- (f) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (g) The details of clean-up or recovery efforts, if any;
- (h) The total amount recovered and its ultimate disposition;
- (i) The identity of the persons with knowledge of the facts of any such incident.

Response to Interrogatory No. 55: No data is available, except as noted in the Response to Interrogatory No. 66.

- C. F. Leshner

STORAGE OF TREATED WOOD

INTERROGATORY NO. 56:

Describe in detail the storage of treated wood at the Site. Identify where the storage yard was located. Include the date, nature and reason for any changes in the storage of treated wood.

Response to Interrogatory No. 56: Appreciably less area was used for the storage of treated ties than white ties as most of them were loaded into open top cars for outbound shipment immediately or a short time after treatment. Two areas were set aside for black ties and timber to be stored after treatment. One was on the extreme North side of the plant, and the other was at the extreme West side, both of which were remote from woodworking machinery and treating cylinders.

Timber was treated on orders from customers and there was no reason to store it for an extended time.

- R. J. Hennessy

INTERROGATORY NO. 57:

For each calendar year, specify how many feet of linear feet of treated wood were stored at the Site.

Response to Interrogatory No. 57: No data is available.

- C. F. Leshner

INTERROGATORY NO. 58:

State whether any of the treatment residue dripped from the wood onto the land surface, due to precipitation or other causes, and if so, state the total amount (by volume and weight) of the residue disposed of. Include a description of effects, if any, to include the treatment residues.

Response to Interrogatory No. 58: The loss of wood preservative solution from the stored impregnated wood would be almost entirely due to vaporization.

The drippings of excess preservative oil immediately after treatment and removal from the cylinder were caught in a concrete sump and pumped to a settling tank for recovery. There may have been minimal dripping of preservative oil from treated wood as it left the cylinder.

The following document, privileged as work product, is identified as relating to the above response: a memo dated 4-20-79 from R. J. Hennessy distributed to E. J. Schwartzbauer and W. J. Keppel.

- W. Roder

TRENCHES

INTERROGATORY NO. 59: State whether Reilly used trenches at the Site, and if so state the following:

- (a) Where the trenches were located;
- (b) The purpose for using the trenches and whether the trenches were effective or ineffective for the stated purpose, with an explanation of how the trenches were effective or ineffective;
- (c) Description of the design of the trenches, including any cover and/or lining used for the trenches;
- (d) Whether the trenches have been filled and, if so, identify the material used to fill the trenches, the purpose for so doing, when it was done and the persons with knowledge of the facts of the event.

Response to Interrogatory No. 59:

- (a) The trenches were located to carry piping from the tank car unloading house to tanks 2 through 10, to the Refinery building, to the Byproducts building, and to the tank house. See document No. 10607.
- (b) Trenches were used because piping could be carried across roads and railroad tracks without overhead bridges or underground

culverts. Also, steam lines were routed through trenches keeping the piping warm to facilitate pumping. They were effective.

- (c) Walls and bottoms of trenches were concrete. Tops were creosoted timbers.
- (d) Some trenches were filled in from '68 to '70 by Paul White. Trenches on the South side of the refinery were ordered filled in by W. A. Justin in 1970 when frequent flooding from Louisiana Avenue made their continued use impractical. Trenches were filled with sand and gravel.

- R. J. Hennessy

DIKES AND PONDING BASINS

INTERROGATORY NO. 60:

State whether Reilly used dikes and/or ponding basins at the Site, and if so, state the following:

- (a) The location where the dikes and ponding basins were located;
- (b) The purpose(s) for using dikes and ponding basins and whether they were effective or ineffective for the stated purpose(s), with an explanation of how the dikes or ponding basins were effective or ineffective;
- (c) Description of the design of the dikes and the ponding basins, including but not limited to any lining used for the ponding basins;
- (d) How and where the water was diverted from the dikes, and how and where water flowed from the ponding basins;

Response to Interrogatory No. 60: Reilly did not use dikes. There were no ponding basins other than the cooling water pond described in the Response to Interrogatory No. 34.

- R. J. Hennessy

WASTE TREATMENT

INTERROGATORY NO. 61:

State what knowledge Reilly had of the standards or criteria within the coal tar refining and the wood preserving industries for the testing and the treatment of wastes prior to disposal, what those standards or criteria were, the sources of that knowledge (including publications, conferences and other trade group activities), whether Reilly followed or observed such standards or criteria prior to disposal, and if so, what procedures or facilities were used to meet the standards or criteria.

Response to Interrogatory No. 61: See document 302767.

- W. Justin

INTERROGATORY NO. 62:

State what knowledge Reilly had of any government standards (federal, state or local) for the testing and the treatment of wastes prior to disposal, what those standards were, whether Reilly followed or observed such standards prior to disposal, and if so, what procedures or facilities were used to meet the standards.

Response to Interrogatory No. 62: See document 302767.

- W. Justin

INTERROGATORY NO. 63:

Describe in detail any waste treatment processes at the Site, including but not limited to, straw filters, baffles and settling basins. Include in the answer the "pollution control device" as the term is used in paragraph 12 of Reilly's Answer to the Complaint; the "regular ground water system" as that term is used in the memorandum of March 3, 1955, number Stamped as No. 104117 and attached hereto as Attachment 2A; and any other procedure, facility, structure, system or device used by Reilly to treat waste or to control or prevent pollution. For each such waste treatment process, state the following:

- (a) When the process was initiated;
- (b) Identification of any internal procedures or guide lines used, considered or available for use in considering or determining which wastes to treat and how such treatment was to be provided;
- (c) Description of all segregable or divisible steps within each treatment process;
- (d) Length or duration of each step;
- (e) Physical state and chemical composition of waste at each step;

- (f) Nature of the transformation of or alternation to waste at each step;
- (g) Identity of each of Reilly's employees assigned to carry out or supervise each step;
- (h) Machinery used during each step; and the methods or procedures used for cleaning each piece of equipment;
- (i) Chemical composition of all chemicals utilized in each step, setting forth the purpose which each chemical was intended to serve;
- (j) Identity of each person who designed each step;
- (k) All modifications, alterations, or adjustments under taken by Reilly including the date, nature and reason of any such modification, alteration or adjustment.

Also include a description of the method and the location for the disposal of the straw filters, as well as a description of how and where the water flowed from the settling basins.

Response to Interrogatory No. 63: Industrial waste water was treated at the St. Louis Park plant by passing it through a 51,000 gallon settling basin where heavy oils settled to the bottom and light oils rose to the top. These were collected and pumped back to working tanks at the treating plant.

A straw filter was provided down stream to collect the iridescent oil by absorption. There were two baskets so they could be changed without interrupting filtration or absorption.

The regular ground water system used in the memorandum of March 3, 1955, stamped as No. 104117, referred to the concrete trench and tile sewer from the vicinity of tank #10 to the sump for the settling basin influent, the settling basin, the effluent sewer, and the straw filter.

"Pollution control device" is the equipment mentioned in the preceding paragraph.

- (a) The oil-water separator was installed in 1940-41, and the straw filter was added in 1951.
- (b) See Response to Interrogatory No. 10.
- (c) Industrial waste water was collected at various sources and flowed through tiles to a sump where it was pumped up into the separator.
- (d) The separator was designed to handle 800 GPM of water with a settling time of 1 hour. Tests showed excellent settling in 1/2 hour. At normal flows the actual settling time was 4+ hours.
- (e) The waste water was contaminated with coal tar oils.
- (f) The settling basin recovered the oils, most of which sank to the bottom, and returned them to process. Iridescent oil floating on the surface was absorbed by the straw filter.
- (g) Plant Manager would have had overall responsibility.
- (h) The light and heavy oil layers were pumped back to process. Centrifugal pump for light oil-positive displacement for heavy oil.
- (i) No chemicals were used. Physical process.
- (j) The waste water separator and straw filter were designed by M. R. Horner and R. J. Hennessy.

(k) None except maintenance.

As to water flow, see Response to Interrogatory No. 6.

- R. J. Hennessy

INTERROGATORY NO. 64:

With regard to Reilly's allegation of ". . . contributory negligence on the part of Plaintiff by its unreasonable and careless discharge of collected surface waters on Defendant's property which floods the pollution control device of the Defendant makes compliance impossible," as that allegation appears in paragraph 12 of Reilly's Answer to the Complaint filed by the State of Minnesota, state the following:

- (a) Definition of the term "collected surface waters" and how, where and by whom such water was collected;
- (b) Identification and location of the "pollution control device", and when and how the device was operated and for what purpose(s);
- (c) Definition of "compliance" and reference to the law, ordinance or regulations with which compliance was sought;
- (d) The dates when the pollution control device was flooded and the volume or depth of water, the efforts of Reilly to repair or redesign the device or otherwise remedy the situation, the consequences of the flooding of the device, and the date and nature of notice given to any governmental entity that the pollution control device was flooded and that compliance was impossible;
- (e) All facts which support the allegation of "contributory negligence on the part of Plaintiff";
- (f) Identification of all persons with knowledge of the facts.

Response to Interrogatory No. 64:

- (a) Surface waters would be those collected on the streets of St. Louis Park to the north and northeast of the plant and due to natural runoff and inability of city storm sewers to handle the volume it was channeled onto Reilly's property from Louisiana Street. See document 100742.

- (b) API separator located southwest of maintenance shop. Used to separate creosote oil and water.
- (c) The word "compliance" was not used in the sense of compliance with any specific legal requirement. It was used to indicate that the flooding interfered with the normal operation of the device.
- (d) Dates are not available, however any normal to heavy thunderstorm or rapid melting of snow cover could flood plant and overload the separator. See, e.g., documents 100742, 101249, 104140 and the "Chronology of Republic Creosote Property," prepared by the City of St. Louis Park, Minnesota, dated October 30, 1974 ("SLP Chronology").
- (e) See, e.g., documents 100742, 201152, the SLP Chronology, and a Minnesota Pollution Control Agency "Office Memorandum" by Michael R. Lutz dated April 20, 1970.
- (f) Numerous Reilly employees including Finch and Justin and governmental employees including McPhee, Lutz, and Koonce.

- W. Justin

SULFURIC ACID DISPOSAL

INTERROGATORY NO. 65:

Describe in detail the events surrounding the disposal of sulfuric acid, referenced in memoranda of August 14, 1964, and September 15, 1964, number stamped as 104326 and 104327 and attached hereto as Attachments Nos. 1A and 1B. In the description, include the following:

- (a) Identification of the tank referenced in the memoranda, a description of the use of this sulfuric acid in Reilly's process and an identification of any material or substances

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which contaminated this sulfuric acid or necessitated the disposal of the acid;

- (b) Identification of the date and location of disposal, for both the sulfuric acid and the sediment from the tank;
- (c) Description of the procedure followed for the disposal of the sulfuric acid and the sediment from the tank;
- (d) Description of the design of the trench(es) used for the disposal of the sulfuric acid and the sediment from the tank, including any lining or cover for the trench(es);
- (e) The amount and concentration of the sulfuric acid and the amount and the chemical composition of the sediment material and all other chemicals, materials and substances disposed of in this event;
- (f) Identification of all officers and employees who authorized the disposal, those who performed the disposal, and any other persons with knowledge of the facts of the event(s);
- (g) Whether Reilly made application and/or obtained any license, permit or approval from any agency of government to do the disposal and if so, an identification of the agency and the approval given;
- (h) Whether any governmental agency was informed of the disposal, and if so, the date and nature of the notice and the identity of the official(s) notified.

Response to Interrogatory No. 65: From subject and date stamps, we believe the memorandum numbered 104326 should have been dated October 14, 1964.

- (a) Based on early tank lists, the acid probably was in Tank I, 8400 gallons, located in the "By-products" area. The sulfuric acid had been used, from approximately the 1920's to the 1940's, in the by-products operation to extract crude tar acid from creosote light oil. By 1964, the material seemed to be surplus with no foreseeable use and the quantity was so small as to be valueless.

- (b) Per the memoranda the disposition evidently took place in the Fall of 1964.
- (c) The procedure is assumed to be as suggested in the memorandum numbered 104327.
- (d) The trenches are described in the memorandum numbered 104327 and the Response to Interrogatory No. 59.
- (e) The sulfuric acid quantity was probably the noted 16 tons.
- (f) The disposition was arranged between C. F. Leshar and R. L. Finch, plant manager. The employees performing the work are not now known.
- (g) We were unaware of any governmental approval requirement.
- (h) Same as (g).

- C. F. Leshar

ZINC CHLORIDE DISPOSAL

INTERROGATORY NO. 66:

Describe in detail the disposal of zinc chloride, referenced in the memorandum of March 3, 1955, number stamped as 104117 through 104120 and attached hereto as Attachments No. 2A through 2D. In the description, include the following:

- (a) Identification of the tank referenced in the memorandum, description of the use of this zinc chloride in Reilly's process and identification of any material or substances which contaminated this zinc chloride or necessitated the disposal of this zinc chloride;
- (b) The reason for the disposal of this zinc chloride;
- (c) The date and location of disposal for both the zinc chloride and any sediment from the tank;
- (d) Description of the procedure followed for the disposal of the zinc chloride and any sediment from the tank;

- (e) Whether disposal was made to a trench, and if so, a description of the design of the trench(es) used for the disposal of the zinc chloride and any sediment from the tank, including any lining or cover for the trench(es);
- (f) The amount and concentration of the zinc chloride and the amount and the chemical composition of any sediment from the tank and all other chemicals, materials and substances disposed of in this event;
- (g) Identification of all officers and employees who authorized the disposal, those who performed the disposal, and any other persons with knowledge of the facts of the event(s);
- (h) Whether Reilly made application and/or obtained any license, permit or approval from any agency of government to do the disposal and if so, an identification the agency and the approval given;
- (i) Whether any governmental agency was informed of the disposal, and if so, the date and nature of the notice and the identity of the official(s) notified;
- (j) Identification and location of "regular ground water system" as that term is used in the memorandum of March 3, 1955, number stamped as No. 104117 and attached hereto as Attachment 2A, and when, and how the system was operated;

Response to Interrogatory No. 66:

- (a) Tank No. 10, with 50,000 gallons capacity was located Northwest within the major tankage area Southwest of the Refinery building. ZnCl_2 solution (2-3%) had been used in the 1920's as a wood preservative and had begun to be phased out in the 1930's due to its lack of efficacy in comparison to creosote oil and the increasing availability of creosote oil.
- (b) In the 1950's, since the material was surplus, the quantity relatively small, the

- resale value negligible and storage capacity needed for coal tar, it was disposed of.
- (c) Per the memorandum numbered 104117, we would assume that it was slowly drained into a trench and thence thru the normal wastewater/run off drainage system.
 - (d) See (c).
 - (e) See (c).
 - (f) Not known.
 - (g) Per noted direction from F. J. Mootz to H. L. Holstrom, plant manager. Employees who performed the disposal are not now known.
 - (h) Unaware of any governmental approval requirement.
 - (i) See (h).
 - (j) See Responses to Interrogatories Nos. 59 and 63.

- C. F. Leshar

DISPOSAL OF CONTAINERS

INTERROGATORY NO. 67:

State whether any drums, vessels, or other containers holding waste were disposed of at the Site and/or Ponding Area, and if so, state the following:

- (a) The number of drums, vessels, or other containers which were disposed of;
- (b) Date(s) of such disposal;
- (c) The exact locations within the Site or the Ponding Area of all drums, vessels, or other containers;
- (d) The chemical composition of the wastes contained in all drums, vessels, or other containers;
- (e) The current condition and disposition of such drums, vessels, or other containers.

Response to Interrogatory No. 67: We are not aware of any such disposal.

- C. F. Leshner

DISPOSAL OF OTHER WASTES

INTERROGATORY NO. 68:

State whether wastes, other than those relating to the coal tar refining and wood preserving done by Reilly at the Site, have been disposed of at the Site, and if so, state the following:

- (a) Exact locations used for such disposal;
- (b) Dates of such disposal;
- (c) Chemical composition of the wastes.

Response to Interrogatory No. 68: We are not aware of any such disposal.

- C. F. Leshner

STUDIES AND REPORTS

INTERROGATORY NO. 69:

State whether any studies, reports or other documents were prepared during the period when Reilly was conducting activities at the Site which indicate that the then-utilized techniques for the disposal of waste at the Site or in the Ponding Area could cause adverse effects on the surrounding environment including soil contamination and pollution of the groundwater and surface water, and if so, identify such studies, reports or other documents and describe their contents, identify all employees or officers of Reilly who knew of the existence of such studies, reports or other documents and the date on which each employee or officer became aware of them.

Response to Interrogatory No. 69: We are aware of none.

- C. F. Leshner

INTERROGATORY NO. 70:

Has Reilly or any of its consultants, experts or subcontractors produced, at any time, any scientific studies and reports, data, internal corporate reports, corporate documents, other reports and documents, correspondence, or other written memoranda or data compilation of any type (either now or in the past) which discuss the soil contamination, water pollution, acute and/or chronic health effects, effects on vegetation or other environmental effects or potential effects related to disposal of waste at the Site and/or the Ponding Area, and if so, identify such documents and describe their contents.

Response to Interrogatory No. 70: None, other than documents already produced and compilations which are privileged as attorney work product.

- R. Polack

TESTS, INSPECTIONS, INVESTIGATIONS, OBSERVATIONS
AND MEASUREMENTS

INTERROGATORY NO. 71:

State whether any sampling and analysis, inspections, investigations, observations or measurements of groundwater and/or surface water have been conducted, at any time, at or within a five mile radius of the Site by or on behalf of Reilly or its predecessors, and if so, state:

- (a) Purpose of collecting each sample or making each inspection, investigation, observation or measurement;
- (b) Exact location, time and date for each sample collected and each inspection, investigation, observation or measurement taken;
- (c) Conditions under which each sample, inspection, investigation, observation or measurement was performed, including but not limited to, ambient temperature, humidity, lighting conditions, location, dimensions, and other conditions relevant to the work performed;
- (d) Identify the person(s) performing the work done and the specific procedures used in collecting each sample and making each inspection, investigation, observation or measurement;
- (e) Identify the person(s) doing the analysis and the analytic procedures followed;
- (f) Criteria used in determining whether each sample, inspection, investigation, observation or measurement should be repeated, including any water quality standards that were used for comparison with the analytical results;
- (g) Any governmental entity to whom the analysis, inspection, investigation, observation or measurement was reported and the date and manner of such notification.

Response to Interrogatory No. 71: The following document references are given in response to Interrogatory No. 71.

Ground Water

302959
302961
302960
302965
302966
302967
303099
302975
302970
302973
302974
303047
303024
100019
100690
302870

Surface or
Effluent Water

302966
302967
302994
302996
303004
303015
303194
303185
303186
303024
303183
303027
303181
303140
303043
303042
303064
303069
302474
302472
302473
302871
302870
302471
302470
302806
302455
302454
302424
302468
302456
302457
303927
304132
302822
302469
302807
303924

- W. Roder

INTERROGATORY NO. 72:

State whether any sampling and analysis, inspections, investigations, observations or measurements of domestic or industrial water supplies have been conducted, at any time, at or within five mile radius of the Site by or on behalf of Reilly or its predecessors, and if so, state:

- (a) Purpose of collecting each sample or making each inspection, investigation, observation or measurement;
- (b) Exact location, time and date for each sample collected and each inspection, investigation, observation or measurement taken;

- (c) Conditions under which each sample, inspection, investigation, observation or measurement was performed, including but not limited to, ambient temperature, humidity, lighting conditions, location, dimensions, and other conditions relevant to the work performed;
- (d) Identify the person(s) performing the work done and the specific procedures used in collecting each sample and making each inspection, investigation, observation or measurement;
- (e) Identify the person(s) doing the analysis and the analytic procedures followed;
- (f) Criteria used in determining whether each sample, inspection, investigation, observation or measurement should be repeated, including any water quality standards that were used for comparison with the analytical results;
- (g) Any governmental entity to whom the analysis, inspection, investigation, observation or measurement was reported and the date and manner of such notification.

Response to Interrogatory No. 72: The following document references are given in answer to Interrogatory No. 72.

The groundwater references given in the Response to Interrogatory No. 71 pertain to the wells on the site.

Wells off the Site: 302964, 302985

- W. Roder

INTERROGATORY NO. 73:

State whether any sampling and analysis, inspections, investigations, observations or measurements of soil and/or geology have been conducted at any time, at or within a five mile radius of the Site by or on behalf of Reilly or its predecessors, and if so, state:

- (a) Purpose of collecting each sample or making each inspection, investigation, observation or measurement;
- (b) Exact location, time and date for each sample collected and each inspection, investigation, observation or measurement taken;
- (c) Conditions under which each sample, inspection, investigation, observation or measurement was performed, including but not limited to, ambient temperature, humidity,

lighting conditions, location, dimensions, and other conditions relevant to the work performed;

- (d) Identity of the person(s) performing the work done and the specific procedures used in collecting each sample and making each inspection, investigation, observation or measurement;
- (e) Identity of the person(s) doing the analysis and the analytic procedures followed;
- (f) Criteria used in determining whether each sample, inspection, investigation, observation or measurement should be repeated, including any water quality standards that were used for comparison with the analytical results;
- (g) Any governmental entity to whom the analysis, inspection, investigation, observation or measurement was reported and the date and manner of such notification.

Response to Interrogatory No. 73: See documents 102452, 303928, 302526, and 302525.

- W. Justin

INTERROGATORY NO. 74:

State whether any tests, inspections, investigations, observations or measurements by or on behalf of Reilly or its predecessors relating to the condition or quality of groundwater, surface water, water supplies, soil contamination or geology, on or within five miles of the Site, have been discontinued before completion, and if so, list:

- (a) Each test, inspection investigation, observation, or measurement which was discontinued;
- (b) The date(s) of such discontinuance;
- (c) The reason or reasons for the discontinuance; and,
- (d) The identity of the person or persons making the decision to discontinue.

Response to Interrogatory No. 74: None.

- R. Polack

COMPLAINTS

INTERROGATORY NO. 75:

State whether any person, at any time, notified Reilly and complained about or expressed concern about

surface water pollution, groundwater pollution, well closure, abandonment, or contamination (including the odor, taste or appearance of water), soil contamination, or other environmental pollution at the Site or within five miles of the Site, and if so, state for each occurrence:

- (a) The name of each person who made a complaint or expressed concern;
- (b) The date of each complaint or expression of concern;
- (c) The substance and contents of each such complaint;
- (d) Whether Reilly responded to such complaint or expression of concern, and if so, identify the person(s) who responded and summarize the response;
- (e) Identify any written reports or documents which were prepared in response to any complaint or expression of concern.

Response to Interrogatory No. 75: Your files contain all complaints from Governmental Agencies that we are aware of. In addition, the following documents are referenced which contain information you request.

302977, 303088, 302956, 302955, 302957, 302983, 302959,
302967, 302961, 302960, 302965, 302964, 302966, 303099,
302969, 302975, 302970, 302973, 302974, 302972, 303647,
302982, 302983, 302984, 302994, 303150, 302993, 302996,
303004, 303201, 303200, 303003, 303014, 303199, 303198,
303012, 303015, 303194, 303016, 303196, 303019, 303020,
303190, 303185, 303024, 303025, 303183, 303027, 303023,
303181, 303029, 303033, 303032, 303035, 303034, 303036,
303035, 303039, 303038, 303052, 303051, 303117, 303055,
303060, 303062, 303063, 303064, 303178, 303066, 101361,
303070, 303072, 303074, 100964, 100817, 100814, 104146,
304224, 100693, 104240, 304204, 303360, 104274, 104273,
104272, 104270, 104271, 302075, 100578, 104265, 100574,
10465, 303430, 100470, 301375, 304450, 304451, 100418,
104309, 104308, 302920, 104306, 201114, 302844, 302239,

200998, 201005, 302809, 302810, 302113, 302210, 302157, 302150, 301782, 302213, 303340, 302144, 301844, 302491, 302500, 302504, 302523, 302559, 301802, 302739, 301999, 100097, 301808, 302767, 100094, 100092, 303828, 301651, 300966, 301116, 301107, 301086, 301082, 301081. See also a report dated 12/13/34 by J. F. McCarthy, apparently sent to the City of St. Louis Park.

- W. Justin

LEACHATE

INTERROGATORY NO. 76:

State whether leachate emanating from disposal at the Site has, at any time, entered into the groundwater within the boundaries of the Site and/or within five miles of the Site, and if so, state:

- (a) The point at which the leachate entered into the groundwater;
- (b) The chemical composition of all such leachate, including the results of any analyses of leachate that have been undertaken by or on behalf of Reilly;
- (c) The date and the manner in which Reilly first became aware that leachate was entering the ground water, including an identification of the person who discovered that leachate was entering the groundwater and the person who reported the problem;
- (d) The actions taken by Reilly upon learning of the entry of leachate into the groundwater, including action taken to remedy the situation;
- (e) Whether Reilly anticipated the possibility that leachate could enter the groundwater;
- (f) The identity of all employees or officers of Reilly who knew that leachate from the Site was entering the groundwater and the date on which each employee or officer became aware of this fact.

Response to Interrogatory No. 76: We have no knowledge of such emanation.

- C. F. Leshner

INTERROGATORY NO. 77:

State whether leachate emanating from disposal at the Site has, at any time, entered wells at the Site, or within five miles of the Site, and if so, state for each well:

- (a) The precise location of the well, and the name, if any, used to describe the well;
- (b) The disposal incident(s) that produced the leachate;
- (c) The chemical composition of the leachate found in the well, including the results of any analyses of leachate in such wells that have been undertaken by or on behalf of Reilly;
- (d) The date and the manner in which Reilly first became aware that leachate was entering the wells, including an identification of the person who discovered that leachate was entering the wells and the person who reported the problem;
- (e) The actions taken by Reilly upon learning of the entry of leachate into the well, including the action, if any, taken to remedy the situation;
- (f) Whether Reilly anticipated the possibility that leachate could enter the wells;
- (g) Whether Reilly is aware of any medical problems in humans or animals as a result of leachate entering the well, and if so, state the nature of these problems;
- (h) Whether the well has been closed or abandoned, and if so, when that was done; and
- (i) The identify of all employees or officers of Reilly who knew that leachate from the Site was entering the wells and the date which each employee or officer became aware of this fact.

Response to Interrogatory No. 77: We have no knowledge of such emanation.

- C. F. Leshner

INTERROGATORY NO. 78:

If the answer to Interrogatory No. 76 above, and/or the answer to Interrogatory No. 77 above, is negative, state each and every fact upon which you rely in answering Interrogatory No. 76 and/or Interrogatory No. 77.

Response to Interrogatory No. 78: We have no reports, data, or communications to suggest any such emanations occurred.

- R. Polack

SPONTANEOUS EVENTS

INTERROGATORY NO. 79:

State whether there were times when Reilly experienced fires, explosions, or other spontaneous events which resulted in the loss of coal tar, raw materials, any products of the processing of coal tar and the preserving of wood, or any other chemicals, substances or materials to the environment (including soil and water), and if so, state the following for each such event:

- (a) The date of the event;
- (b) A detailed description of the event including the cause of the event;
- (c) Each building, tank, pond, basin, trench, dike, ditch, or other structure or piece of equipment, that was the subject of the event;
- (d) Which materials, chemicals, substances or other materials were involved in the event and whether they were disposed of, and if so, the total amount (by volume and weight) of the disposal;
- (e) The identity of any governmental entity to whom the disposal was reported, the date and manner of such notification and the identity of the official so notified;
- (f) What cleanup measures were undertaken by Reilly for the event;
- (g) The identify of the persons with knowledge of the facts of the event.

Response to Interrogatory No. 79: See the following referenced documents:

103737, 102523, 200000, 201494, 100330, 201558, 201196, 201028, 201020, 200736, 200791, 200750, 202001.

- W. Justin

ILLNESSES

INTERROGATORY NO. 80:

State whether any employees of Reilly, its subcontractors, clients, customers, visitors, truckers,

- (e) Treatment received and identity of treating physician unknown.
- (f) Claim made in the form of a letter dated 2/28/80 from Gerald C. Magee, attorney for Mae C. Ohde claiming death causally related to employment. Claim petition filed with State of Minnesota Workers' Compensation Division Department of Labor and Industry.
- (g) Reilly does not have this information in its possession. It is advised by its insurer that no compensation has been paid, but that the sum of \$2,052.45 has been paid for medical expenses over a period of years.
- (h) No.

- R. Polack

MEETINGS

INTERROGATORY NO. 81:

State whether any meetings were held, at any time, between Reilly and representatives of the United States Environmental Protection Agency (or its predecessors) with regard to the Site, and if so, state for each meeting:

- (a) The date of the meeting;
- (b) The identity of persons in attendance;
- (c) The subject matter or topics discussed at the meeting; and
- (d) Identity and description of all memoranda, records, or other documents prepared for, generated by, or caused to be prepared by or on behalf of Reilly as a result of the meeting.

Response to Interrogatory No. 81: We are not aware that any meetings were held with the U.S. EPA or its predecessors, other than an October, 1980 meeting with the attorneys for plaintiffs and representatives of the EPA.

- W. Justin

INTERROGATORY NO. 82:

State whether any meetings were held, at any time, between Reilly and representatives of the State of Minnesota, Minnesota Pollution Control Agency (or its predecessors) or the Minnesota Department of Health (or its predecessors) with regard to the Site, and if so, state for each meeting:

- (a) The date of the meeting;
- (b) The identity of persons in attendance;
- (c) The subject matter or topics discussed at the meeting; and
- (d) Identity and description of all memoranda, records, or other documents prepared for, generated by, or caused to be prepared by or on behalf of Reilly as a result of the meeting.

Response to Interrogatory No. 82: Your files contain all governmental meetings and replies we are aware of. In addition the following document references are submitted.

303067, 302846, 301703, 402041R, 402039R, 302872, 301562, 302002, 302599, 302000, 302663, 302728, 301970, 304000, 302379, 301466, 208242.

- W. Justin

INTERROGATORY NO. 83:

State whether any meetings were held, at any time, between Reilly and representatives of the City, as defined in Definition No. 4 above, with regard to the Site, including but not limited to the meeting referenced in Paragraph No. 8 of Reilly's answer to the Complaint filed by the State of Minnesota in this matter, and for each such meeting state the following:

- (a) The date of the meeting;
- (b) The identity of persons in attendance;
- (c) The subject matter or topics discussed at the meeting; and
- (d) Identity and description of all memoranda, records, or other documents prepared for, generated by, or caused to be prepared by or on behalf of Reilly as a result of the meeting.

Response to Interrogatory No. 83: Your files contain all governmental meetings we are aware of. In addition the

following document references are submitted. 303076, 301375, 303759, 302289, 302447, 302844, 301584, 302852, 302239, 302242, 221627, 221424, 460285, 460271, 302819, 303341, 303955, 302822, 303957, 302458, 304402, 301577, 302385, 301862, 302167, 302857, 301845, 301795, 301690, 301688, 302083, 301843, 302464, 302694, 302465, 302894, 303970, 304115, 303979, 300746, 302663, 400718, 410477, 460405, 406408, 460382, 460340, 301562, 302002, 302599, 302000, 302638, 306491, 302663, 302728, 301970, 301525, 301532, 301551, 306433, 303912, 303989, 301506, 303992, 301489, 304000, 208242, 301368, 301458, 301366, 300633. See also 221167, attached as Appendix G.

Reilly has additional documents which are privileged which it has not produced which refer to the same meetings that are described in the foregoing documents. The privileged documents are:

<u>Document Number</u>	<u>Date</u>	<u>Author</u>	<u>Addressee</u>	<u>Reason for Privilege</u>
400689	5-70	Reiersgord	None	work product
306325	6-30-70	Reiersgord	Ryan (cc: Finch)	legal advice
306326	6-70	Reiersgord	None	work product
306432	2-12-71	Reiersgord	None	work product
208175	2-12-71	Reiersgord	None	work product
208254-6	12-15-71 12-16-71	Reiersgord	Ryan (cc: Finch)	legal advice and work product
410414	9-1-71	Reiersgord	None	work product
208179-80	5-6-71	Reiersgord	Ryan (cc: Finch)	legal advice and work product
306469-70	2-5-71	Reiersgord	None	work product

(

(

(Note: 306469 also refers to a meeting on 2-4-71 between McPhee and an unidentified Reilly employee concerning samples.)

- W. Justin

INTERROGATORY NO. 84:

State whether any meetings were held, at any time, between Reilly and representatives of the Authority, as defined in Definition No. 5 above, or with the Commission, as defined in Definition No. 6 above, with regard to the Site, and if so state for each meeting:

- (a) The date of the meeting;
- (b) The identity of persons in attendance;
- (c) The subject matter or topics discussed at the meeting; and
- (d) Identify and describe all memoranda, records, or other documents prepared for, generated by, or caused to be prepared by or on behalf of Reilly as a result of the meeting.

Response to Interrogatory No. 84: See Response to Interrogatory No. 82.

- R. Polack

OTHERS LIABLE

INTERROGATORY NO. 85:

Does Reilly allege that any person, not a party to this action, is liable for the water pollution by phenolic compounds, PAH, and other compounds found in coal tar and its derivatives, and if so, enumerate specifically each and every fact upon which Reilly bases its contention(s).

Response to Interrogatory No. 85: Reilly is continuing to investigate and is unable to answer at this time.

PHOTOGRAPHS

INTERROGATORY NO. 86:

With regard to the attached photographs, number stamped as Nos. 305243 and 305244 and attached hereto as Attachment Nos. 3A and 3B, identify each photograph, the date the photograph was taken, who took the photograph, and provide the following information with regard to each of the structures, buildings, tanks, facilities and areas, marked and numbered as Nos. 1 - 69:

Photograph No. 305243: the structure marked as No. 1; the building marked as No. 2; the tanks marked as Nos. 3-10; the structure marked as No. 11; the buildings marked as Nos. 12-15; the area marked as No. 16; the building marked as No. 17; the buildings marked as Nos. 18 and 19; the structure marked as No. 20; the buildings marked as Nos. 21 and 22; and the area marked as No. 23.

Photograph No. 305244: the structure marked as No. 24; the building marked as No. 25; the tanks marked as No. 26-33; the structure marked as No. 34; the buildings marked as No. 35-38; the area marked as No. 39; the building marked as No. 40; the buildings marked as Nos. 41-47; the area marked as No. 48; the facilities marked as No. 49; the area marked as No. 50; the facilities marked as No. 51; the facilities marked as No. 52; the object marked as No. 53; the area marked as No. 54; the area marked as No. 55; the buildings marked as Nos. 56-58; the tanks marked as Nos. 59-61; the structure marked as Nos. 62-68; and the area marked as No. 69.

For each of the foregoing, state the following:

- (a) The name of term commonly used to identify or refer to the structure, building, tank, facility or area at the time of the photograph;
- (b) The date when the structure, building, tank, facility or area was constructed and the date, nature and reason for any change(s) in the structure, building, tank, facility or area;
- (c) The use or purpose of the structure, building tank, facility or area;
- (d) The capacity of the structure, building, tank, facility or area;
- (e) The material stored or processed at the structure, building, tank, facility or area.

In addition, with regard to the area marked as No. 50, identify the stored material and provide its chemical composition; furthermore, with regard to the areas marked as Nos. 54 and 55, state whether the trench network at the Site flowed to these areas.

Response to Interrogatory No. 86: Both photographs are an aerial view of the St. Louis Park Plant. No.305243 was probably taken in the late 30's and No. 305244 was probably taken in the early 50's.

Photograph 305243:

Mark

1	Tar cistern
2	Tank Car Unloading Shed
3	Storage Tank No. 7
4	" " " 2
5	" " " 3
6	" " " 5
7	" " " 8
8	" " " 4
9	" " " 6
10	" " " 10
11	Transformer Pad
12	By Products Building
13	Garage & Shop
14	Plant Office
15	Refinery Building
16	Cooling Pond
17	Pump House
18	Boiler House & Tank House
19	Locomotive House
20	Adzing & Boring Mill
21	Creosoting Cylinder House
22	" " "
23	Concrete Loading Ramp

Photograph 305244:

24	Tar Cistern
25	Tank Car Unloading Shed
26	Storage Tank No. 7
27	Storage Tank No. 2
28	" " " 3
28	" " " 5
29	" " " 8
30	" " " 4
31	" " " 6
32	" " " 10
33	Transformer Pad
34	By Products Building
35	Garage & Shop
17	Office & Laboratory
38	Refinery
39	Cooling Pond
40	Pump House
41	Boiler House
42	Locomotive House
43	Adzing & Boring Bldg.
44	Cylinder House
45	Cylinder House
46	Shower and Wash Room
47	Incising Building
48	Concrete Loading Ramp
49	By Product Plant
50	Discarded Firebrick from Shell Stills
51	Tanks for Refinery
52	Tank House for Treating Plant
53	Car Load of White Ties
54	Bog South of Walker Street (trench network did not flow to this area)

55 Bog South of Walker Street
(trench network did not flow
to this area)
56 to 59 Blacktop Service Co. (Asphalt
Plant)

See also Response to Interrogatory No. 16.

- R. J. Hennessy

INFORMATION

INTERROGATORY NO. 87:

Identify all persons who now work or have worked for Reilly, or have been or are consultants to Reilly or work for consultants hired by Reilly who have information relating to any of the following subjects:

- (a) The effects of phenolic compounds, PAH, and other compounds found in coal tar and its derivatives, on the human body or the environment;
- (b) Reilly's decision-making relating to the disposal of wastes at the Site;
- (c) Any economic benefits resulting to Reilly by failing to properly dispose of wastes at the Site;
- (d) Reilly's efforts to assure that wastes were disposed of at the Site in a proper manner;
- (e) Present need for remedial action at, or in the vicinity of the Site.

Response to Interrogatory No. 87:

- (a) Reilly Tar & Chemical Corporation. The persons who are currently available are listed below. The records produced identify many others.

Francis E. Cislak
5331 Kenwood Avenue
Indianapolis, Indiana 46208

William R. Wheeler
502 West 77th Street
Indianapolis, Indiana 46260

Carl F. Leshner
Reilly Tar & Chemical Corp.
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

Robert Polack
Reilly Tar & Chemical Corp.
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

Gerald L. Goe
Reilly Tar & Chemical Corp.
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

William Roder
Reilly Tar & Chemical Corp.
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

William Justin
Reilly Tar & Chemical Corp.
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

- (b) Carl F. Leshner
Reilly Tar & Chemical Corp.
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

Herbert Finch
8213 Virginia Circle North
Minneapolis, Minnesota

Richard Hennessy
5816 Crittenden Avenue
Indianapolis, Indiana 46220

Harold R. Horner
4712 Round Lake Road
Indianapolis, Indiana 46205

William Justin

William R. Wheeler

- (c) This question assumes that Reilly failed properly to dispose of wastes and that economic benefits resulted therefrom, an assumption which Reilly disputes. In any event, there are no witnesses who would be aware of alleged economic benefits.

- (d) See (b) above.

(e) Environmental Research & Technology, Inc.
Porter Building
10th Floor
601 Grant Street
Pittsburgh, Pennsylvania 15219

F. C. McMichael
Porter Building
10th Floor
601 Grant Street
Pittsburgh, Pennsylvania 15219

John Craun
Porter Building
10th Floor
601 Grant Street
Pittsburgh, Pennsylvania 15219

- R. Polack

INTERROGATORY NO. 88:

Identify all persons not previously identified in response to these interrogatories having knowledge or information relevant or related to any of the allegations contained in Reilly's Answers who are known to Reilly, their attorneys, or agents, including but not limited to experts retained but not expected to be called as expert witnesses at substance of each person's knowledge or information.

Response to Interrogatory No. 88: None, other than those identified in various documents already produced.

- R. Polack

EMPLOYEES

INTERROGATORY NO. 89:

Identify all persons who were employed by Reilly and worked at the Site in any capacity, as well as any Reilly employees who did not work at the Site but who had some responsibility for managing or supervising activities at the Site, and for each person provide at least the following information:

- (a) The dates of employment;
- (b) The position in which the person was employed;
- (c) The duties of the person;
- (d) The present address of person;
- (e) The reason for the person's termination from employment with Reilly.

Response to Interrogatory No. 89: The identity of all such persons known to Reilly at this time has been set forth in prior answers or identified in documents already produced.

- R. Polack

WITNESSES

INTERROGATORY NO. 90:

State the name, official position, place of employment, business address, and field of expertise of each person whom you expect to call as an expert witness at trial. For each expert witness state:

- (a) The subject matter on which the expert is expected to testify;
- (b) The substance of the facts and opinions to which the expert is expected to testify;
- (c) A summary of the grounds for each opinion to which the expert is expected to testify;
- (d) Identify by title, author and date of publication all treatises, books, studies, articles or other materials upon which said expert relied for formation or support of his or her opinion.

Response to Interrogatory No. 90: Reilly has not yet made a decision concerning the identity of expert witnesses who will be called at trial.

REILLY TAR & CHEMICAL
CORPORATION

By

Robert Polack
Robert Polack
Vice President and General
Counsel

Subscribed and sworn to
before me this 2nd day of
October, 1981.

Veronica M. Bledsoe
Notary Public

VERONICA M. BLEDSOE
MY COMMISSION EXPIRES JAN. 23, 1982

DORSEY, WINDHORST, HANNAFORD,
WHITNEY & HALLADAY

By

Edward J. Schwartzbauer
Edward J. Schwartzbauer

FILE NO.

ACCOUNT NO. 2C-2R

JOB NO.

19-1- PLANT LAYOUTS - RR. - SURVEYS

211

19-2- UNIT 16

212

19-3- FIRE PROTECTION 248

213

19-4- TREATING BUILDING & EQUIPMENT

214

19-5- ADZING & BORING & INCISING EQUIPMENT 234 244 215

19-6- ROLLING EQUIPMENT 203 233 243 247

216

19-7- WAREHOUSE

217

19-8- MILL & EQUIPMENT 238

218

19-9- REFINERY BUILDING 246

219

19-10- REFINERY EQUIPMENT 229 235 236 241 242 245 249 257 220 8-1-15

19-11- BOILER HOUSE & EQUIPMENT 237 258

221

19-12- STEAM LINE TO REFINERY

222

19-13- SEWERS & DRAINAGE

223

19-14- OFFICE 201 202

224

ST. LOUIS PARK, MO.

FILE NO.	DESCRIPTION	PREVIOUS NO.
211	PLANT LAYOUTS & R.R. SURVEYS	19-1
212	UNIT 16	19-2
213	FIRE PROTECTION	19-3
214	TREATING BUILDING EQUIPMENT	19-4
215	ADZING & BORING & INCISING EQUIPMENT	19-5
216	ROLLING EQUIPMENT	19-6
217	WAREHOUSE	19-7
218	MILL EQUIPMENT	19-8
219	REFINERY BUILDING	19-9
220	REFINERY EQUIPMENT	19-10
221	BOILER HOUSE & EQUIPMENT	19-11
222	STEAM LINE TO REFINERY	19-12
223	SEWERS & DRAINAGE	19-13
224	OFFICE	19-14
225	CHANGE ROOM	
226	GARAGE & BLACKSMITH SHOP	
268	TEMPERATURE RECORDER TO STILL	
272	FEED WATER HEATER PIPING	
267	ELECTRODE PITCH PLANT.	
268	A & B MILL PREPARATION FOR LIFT TRUCK & GARAGE	
269	TEMPERATURE RECORDER FOR STILL?	
270	DEEP WELL PUMP, TANK & WATERLINE	
272	BOILER FEED WATER SYSTEM	
273	ELECTRODE PITCH BAY EXTENSION	
282	ELECTRODE PITCH PLANT EXPANSION	
286	OVERHEAD STEAM LINE - REFINERY TO TANK FARM	
289	PROPOSED COOLER FOR BLEND TANK.	
291	GAS FROM BOILER ROOM TO REFINERY SEE 271	
298	FABRICATE & INSTALL FIRE TUBE CONVERSION STILLS IN SETTING B, M, 15216	

		BY	DWG. No.	FILE
T	GENERAL PLANT LAYOUT	R.C.C.	19-1-1	19-1-1
MAP	ROAD MAP OF HENNEPIN & RAMSEY COUNTIES	L.E.H	19-1-2	19-1-2
B.P.	LAYOUT OF R.R. TRACKS	NT R.C.C.	19-A-1	19-1-3
"	STORAGE & PLANT LAYOUT	NT 1 "	19-1-4	19-1-4
"	SURVEY OF PLOT	NT "	19-1-5	19-1-5
"	GENERAL LAYOUT	NT "	19-1-6	19-1-6
"	PROPERTY OF R.C.C.	NT "	19-1-7	19-1-7
"	LOCATION OF PROPOSED TRACKAGE	P	19-1-8	19-1-8
B.P.	PLANT LAYOUT	MEMO	L-63	19-1-9

	By	DWG #	FILE
BP. GENERAL PLANT LAYOUT	R.C.Co	19-1-1	19-3-1
MAP INSURANCE MAP - See Insurance File for Drawing	M.&M.	19-3-2	19-3-2
BP. PROFILE OF 8" WATER MAIN	R.C.Co.	19-3-3	19-3-3
" LAYOUT & DETAIL OF FIRE PROTECTION SYSTEM	R.C.Co	19-3-4	19-3-4
" PROFILE OF 8" WATER MAIN	"	19-3-5	19-3-5

	By	Dws. #	FILE
BP. LOCATION OF PILING FOR N. RETORT & TANK FOUNDTN	W.H.W.	1	19-4-1
" WORKING PLANS FOR RETORT BLDG.	"	2	19-4-1
" " " " WALLS	"	3	19-4-1
" " " " " "	"	4	19-4-1
" " " " " "	"	5	19-4-1
" " " " " "	"	6	19-4-1
" " " " " "	"	7	19-4-1
" " " " " "	"	8	19-4-1
" " " " " "	"	9	19-4-1
" 72" ϕ x 175'-0" LONG, CREOSOTING CYLINDER	B.B.Co.	D-2511	19-4-1
" GENERAL LAYOUT PIPE SYSTEM	R.C.Co.	19-4-11	19-4-1
" NEW CARD PROCESS FOR TREATING	B.F.Co.	19-D-30	19-4-1
" PILING & FOOTING PLAN OF TANK HOUSE	H.A.S.	1	19-4-1
" PLAN OF FOUNDATION WALLS	"	2	19-4-1
" FLOOR PLAN	"	3	19-4-1
" FRONT ELEVATION	"	4	19-4-1
" REAR	"	5	19-4-1
" END	"	6	19-4-1
T GENERAL LAYOUT OF DRYING EQUIPMENT ETC.	N.P. R.C.Co.	19-D-1	19-4-1
" " ASSEMBLY OF EQUIPMENT & STRUCTURAL STEEL	N.P.	19-D-2	19-4-2
" DETAILS OF STRUCTURAL SUPPORTS & PIPE HANGER	N.P.	19-D-3	19-4-2
" GENERAL LAYOUT & DETAILS OF INSULATION	"	19-D-4	19-4-2
" EJECTOR CONNECTIONS TO TREATING CYLINDERS	"	19-4-23	19-4-2

	By	Dwg #	FILE
BP FOUNDATION & PILING PLAN TIE MACHING BLDG	W.H.W.	1	19-5-1
" GROUND FLOOR & ROOF PLAN " " "	"	2	19-5-2
" DETAIL OF WALL GIRDERS " " "	"	3	19-5-3
" ELEVATIONS & MACHINE FOUNDATIONS " "	"	4	19-5-4
" LAYOUT OF TIE ADZER	G.B. Co.	10402PL	19-5-5
" PLAN OF TIE MACHINING PLANT	B.B. Co.	1517	19-5-6
" FOUNDATION PLAN " " "	"	1518	19-5-7
" PROPOSED TIE MACHINING MILL	G.B. Co.	1410	19-5-8
" TIE BRANDING MACHINE	"	2832X-L	19-5-9
" ADJUSTABLE TIE BORING MACHINE	"	676ZN-L	19-5-10
" ASSEMBLY OF CAM ADJ. PARTS	"	2922X-L	19-5-11
" SECTION "A"-"A" OF 676ZN-L	"	673ZN-L	19-5-12
" " " " " " " "	"	675ZN-L	19-5-13
" " " " " " " "	"	6332	19-5-14
" SPINDLE GEAR BOX TIE BORING MACHINE	"	15602N-L	19-5-15
" 8' GRAVITY CONVEYOR WITH STOP	"	11602N-L	19-5-16
" TIE RAISING DOG ASSEMBLY	"		19-5-17
" GEAR BOX PUMP	"	19192N-S	19-5-18
" LOADING FORM SPRING ATTACHMENT	"	18132N-M	19-5-19
" ASSEMBLY OF SPINDLE PARTS	"	15162N-M	19-5-20
" TIE MOVING MOVING MECHANISM	"	17282N-L	19-5-21
" FLOOR PLAN	"	1521	19-5-22
" LINE MARKING SAW	"	28972N-M	19-5-23
" ADZER KNIFE BALANCING STAND	"	10412PL	19-5-24
" BILLS OF MATERIAL FOR ADZING & BORING EQP	"	9164	19-5-25
T Layout of Incising Machine	R.C. Co.		19-5-26
T ARRANGEMENT OF CONVEYORS TO INCISING MACHINE	R.C. Co.	19-5-27	19-5-27
T INCISING MACHINE BUILDING		19-5-28	19-5-28
T DETAILS OF INCISING BUILDING		19-5-29	19-5-29
BP PIPING DIAGRAM FOR TIMBER INCISING MACHINE	CB. & GRP	M-3399	19-5-30
" PROPOSED ADDITION OF TIE & TIMBER CONVEYORS	G. B. Co.	1795	19-5-31
T Sprocket wheel for incising machine			19-5-32
T INCISING ROLL HEAD FOR TIMBER INCISING MACHINE	R.T. Co.	19-5-33	19-5-33
T Details of Conveyors to Incising Machine	R.C. Co.	19-5-34	19-5-34

		BY	DWG#	FILE
BY	TIE TRAM 24" GAUGE 6'-0" CYL	M.S.C. Co.	308	19-6-1
"	RACK CARS	C.I.W. Co.	6478	19-6-2
"	TIE TRAM		19-6-3	19-6-3
"	TRAM CAR DUMPING RIG	G.B. Co.	2322M	19-6-4
"	CAR HAUL	D.I.W. Co.	11424	19-6-5
"	" PULLER	"	10962	19-6-6
"	TYPE 2 JLC LOCOMOTIVE	F.R.H. Co.	JL-1015	19-6-7
"	LIST OF PARTS FOR ABOVE ENGINE	"	"	19-6-8
"	1ST FLOOR PLAN OF WAREHOUSE	R.C. Co.	1	19-7-9
"	2ND " " " "	"	2	19-7-1
"	SIDE ELEVATION " "	"	3	19-7-11
"	SECTIONAL VIEWS " "	"	4	19-7-12
T	MANHOLE COVER RCX 50-61	R.C. Co.	19-6-9	19-6-9
"	" " " 66-74	"	19-6-10	19-6-10
"	" " " 58	"	19-6-11	19-6-11
"	" " " 65, 68, 69	"	19-6-12	19-6-12
"	BRONZE TRAM BEARING	"	19-6-13	19-6-13

	By	Dwg #	FILE
BZ PROPOSED CHANGES IN POWER TRANSMISSION	R.E.Co	19-8-1	19-8-1
" LUMBER CONVEYOR	"	19-8-2	19-8-2
" BLOCK SAW	"	19-D-25	19-8-3
" SHAVINGS EXHAUST PIPES	G.B.Co	1411	19-8-4
" PROPOSED CHANGES & IMPROVEMENTS	R.C.Co	19-D-22	19-8-5
" TOOL ROOM	G.B.Co	983	19-8-6
" PROPOSED CHANGES IN POWER TRANSMISSION	R.C.Co	19-D-27	19-8-7
T BLOOMINGTON MILL BUILDING	"	19-C-3	19-8-8

By	Dwg #	File
H.A.S.	19-9-1	19-9-1
"	19-9-2	19-9-2
"	19-9-3	19-9-3
"	19-9-4	19-9-4
"	19-9-5	19-9-5

BP	BUILDING PLAN
"	FOOTING
"	FLOOR
"	"
"	ELEVATIONS

	BY.	DWG No.	FILE
B.P. 90"x16" STILL	R.C.Co	2	19-10-1
" FLOAT MECHANISM (7'6" x 14' LONG PITCH TANKS)	W.B.B.C.	B-2308	19-10-2
" SAFETY VALVE INSTALLATION			19-10-3
" MANOMETER PIPING DIAGRAM	R.C.Co	8-D-24	19-10-4
" MANHOLE COVER	"	19-10-5	19-10-5
" BATTERY OF STILLS	"	1	19-10-6
T. REFINERY DETAIL	R.C.Co	19-D-24	19-10-7
T. PROFILE OF COKE TRACKS & DOOR SILLS	"	19-D-23	19-10-8
" STILL ROOM - PAN ROOM SEAL	"	19-10-9	19-10-9
			10
			11
			12
			13
B.P. MANHOLE COVER RELEASE			19-10-14
" " "			19-10-16
" DUTCH OVENS	R.C.Co	8D-40	19-10-16
" STILL DAMPER	"	3	19-10-17
" DETAIL OF 12"x18" DOOR FOR REILLY STILLS	"	S-76	19-10-18
" PROPOSED TAR DEHYDRATING TANK	"	8-D-48	19-10-19
			21
B.P. MAYWOOD STILL	R.C.Co	BD20	19-10-2
" STILL DETAILS	R.C.Co	BS81	19-10-2
" STILL DAMPER CONTROL	R.C.Co		19-10-3
T. ASSEMBLY OF STILL 7'-6" x 16'	RT.C.	19-14-24	19-10-3
B.P. ARRANGEMENT OF WELDED COKEING STILLS (OBSOLETE)	L.I.W./AC	D-11257-L	19-10-2
B.P. 7'-7" x 16'-1" LG COKE STILL (CORRECT PRINT)	L.I.W./AC	D-14311-L	19-10-3
T. 7'-7" x 16'-1" REILLY WELDED STILL	RT.C.	19-10-27	19-10-2

	BY	DWG No	FILE
T. DETAILS OF PITCH BURNING SYSTEM (STORAGE EQPT)	R.C.Co.	19-11-1	19-11-1
" " " " " (PITCH LINE	"	19-11-2	19-11-2
" ROOF OPENINGS FOR BOILER INSTALLATION	"	19-11-3	19-11-3
" LAYOUT OF BOILER & EQPT	"	19-11-4	19-11-4
" DETAILS OF FLUE	"	19-11-5	19-11-5
" " " PILING PLAN FOR BOILER	"	19-D-18	19-11-6
B.P. FOUNDATION FOR BOILER	R.S.Co.	1263B4-4	19-11-7
" DETAILS OF COLD AIR DUCT	"	1263X5-2	19-11-8
" " " FRONT WALL SUPPORT	"	1263B 19	19-11-9
" " " CASING	"	1263T3-3	19-11-10
" " " SOOT BLOWER	DPSC Co.	3-8098	19-11-11
" " " CLARAGE FAN	CFCo.	R-21181	19-11-12
" SOOT BLOWER PIPING	R.S.Co.	B-K1481	19-11-13
T FOUNDATIONS FOR OIL & PITCH TANK	R.C.Co.	19-11-14	19-11-14
" DETAILS OF BOILER FUEL SYSTEM	"	19-11-15	19-11-15
" MISC. PIPING DETAILS	"	19-11-16	19-11-16
B.P. TANK & POWER HOUSE PILING & FLOOR PLAN	H.A.S.	19C2-1	19-11-17
" " " " " ELEVATIONS	"	19C2-2	19-11-18
" DETAILS OF FOUNDATIONS FOR ADDITIONAL BOILER BURN	R.C.Co.	19-D-19	19-11-19
" GENERAL DESIGN OF ADDITION TO BOILER HOUSE	"	19-D-20	19-11-20
" DETROIT STOKER	D.S.Co.	19-D-31	19-11-21
" SETTING PLAN FOR 72'x18' BOILER	B.B.Co.	C-3035	19-11-22
" BROS WATERTUBE BOILER	"	D-8918-A-2	19-11-23
" ARRGMT OF BURNERS & FURNACE FOR 350 HP BOILER	NAB.Co.	A-746	19-11-24
" PAPSD. ARRGMT. OF RILEY STEAM GEN'G UNIT	R.S.Co.	OF-H450-7	19-11-25
" " " " " " "	"	OF-H453-4	19-11-26
" N. A. BURNER FOR R.C.Co.	NAB.Co.	A-831	19-11-27
" ARRGMT. OF BURNERS & FURNACE FOR "R0" BOILER	"	A-832	19-11-28
" " " " " " "	"	A-834	19-11-29
" WIND BOX DETAILS FOR 300 HP BOILER	"	A-835	19-11-30
" ARRGMT OF BURNER WITH S-520X & B-7 BLOCK	"	B-1732	19-11-31
" " " PIPING FOR PITCH BURNING SYSTEM	"	B-2109	19-11-32
" ASSEMBLY OF #1 SAR. ACID SLUDGE TYPE FUEL OIL BURN	"	B-2011	19-11-33
" No. 1 AIR DOOR ASSEMBLY	"	R-558	19-11-34
" FOUNDATION & FLOOR INSULATION ARRANGEMENT	R.S.Co.	1263-B4	19-11-35
" GENERAL ARRGMT. OF RILEY TYPE "R0" BOILER	"	1263-B5	19-11-36
" FRONT CASING & SUGGESTED WINDBOX DETAILS	"	1263-T3	19-11-37
" COLD AIR DUCT	"	1263-X5	19-11-38
" ARRGMT & DETAILS BURNER BOX & AIR SUPPLY DUCT ETC.	"	1263-X5A	19-11-39
T. FUEL HANDLING SYSTEM	N.P. R.C.Co.	19-11-40	19-11-40
B.P. MATERIAL SHEET	NAB.Co.	18163	19-11-41
" " " " " " "	"	18311	19-11-42
" SLIDING DAMPER UNIT No 5079	"	R-5079	19-11-43
" No 2 AIR DOOR ASSEMBLY	"	R-5021-2	19-11-44
" ARREST. OF PIPING FOR PITCH BURNING SYSTEM	"	B-2109	19-11-45
" No 1 AIR DOOR ASSEMBLY	"	R-558	19-11-46
" ARRGT. OF BURNERS & FURNACE FOR RILEY "R0" BOILER	"	A-834	19-11-47
" WIND BOX DETAILS FOR 300 HP BOILER	"	A-835	19-11-48
" DIMENSIONS FOR FL & FH PUMPS	I.P. Co.	D5574	19-11-49
" SINGLE ACTING HYDRAULIC TRIPLEX - 1 1/2" x 6"	D.B.Co.	3798	19-11-50
T. BOILER ROOM	"	19-11-51	19-11-51
B.P. EXPANSION JOINT U-TYPE	C&S/INC	201B1	19-11-52

	BY	DWG #	FILE
T BR	R.C. Co.	19-D-12	19-12-1
DETAILS OF NEW STEAM LINE TO REFINERY	"	19-D-13	19-12-2
GEN. LAYOUT & DETAILS OF OVRHD STEAM LINE AT B. H.	"	19-D-15	19-12-3
" " " & BILL OF MATERIAL " " "	"	19-D-16	19-12-4
DETAILS OF BEAMS & UPRIGHT SUPPORTS " "	"	19-D-17	19-12-5
" " " VARIOUS MEMBERS OF OVRHD " " "	"	19-A-4	19-12-6
" PROPOSED STEAM LINE	NT	19-D-14	19-12-7
T DETAILS OF STEEL SUPPORTING FRAMEWK. OVRHD. LINE	NP	19-12-8	19-12-8
BR GEN'L Layout of Important Steam Lines at Ref.	"		

TYPE	FILE	TITLE	BY	DRWG	#	FILE	#
T		GENERAL PLANT LAYOUT ASSOCIATE	R.C. Co.	19-1-1		211-1	
MAP		ROAD MAP OF HENNEPIN & RAMSEY COUNTIES	L.E.H.	19-1-2		211-2	
BP		LAYOUT OF R.R. TRACKS	R.C. Co.	19-A-1		211-3	
BP		STORAGE & PLANT LAYOUT	R.C. Co.	19-1-4		211-4	
BP		SURVEY OF PLOT	R.C. Co.	19-1-5		211-5	
B.P.		GENERAL LAYOUT	R.C. Co.	19-1-6		211-6	
B.P.		PROPERTY OF R.E. Co.	R.C. Co.	19-1-7		211-7	
BP		LOCATION OF PROPOSED TRACKAGE		19-1-8		211-8	
BP		PLANT LAYOUT	M&MS	L-68		211-9	
T	PS	MINNEAPOLIS PLANT MAP (REVISED 3-1954)	REPC.	19M		" - 10	
PS	WR	MINN. PLANT; GORMAN AVE., WALKER ST. TO LOUISIANA AVE.	P.W. SMITH			" - 11	
T		WORK ORDER RECORD.	CITY ENG.			" - 12	
R.T. PH		COUNTY MAP SHOWING PROPERTY LINES	R.T. CH.			" - 13	
R.T. PH		COUNTY MAP	COUNTY			" - 14	
BP PH		MINN CAR COMP. SHOPS (1909)	M.C. Co			" - 15	
BP PH		ST. LOUIS PARK PROPERTY MAP				" - 16	
BP PH		"				" - 17	
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TYPE	FILE	TITLE	BY	DRWG	FILE
BP		LOCATION OF PILING FOR N. RETORT & TANK FUND	W.H.W	1	214-1
BP		WORKING PLANS FOR RETORT BLDG.	W.H.W	2	214-2
BP		" " " " WALLS	W.H.W	3	214-3
BP		" " " " " "	W.H.W	4	214-4
BP		" " " " " "	W.H.W	5	214-5
BP		" " " " " "	W.H.W	6	214-6
BP		" " " " " "	W.H.W	7	214-7
BP		" " " " " "	W.H.W	8	214-8
BP PS		" " " " " "	W.H.W	9	214-9
BP		72" ϕ X 175'-0" LONG CREOSOTING CYLINDER	B.B. Co	D-2511	214-10
BP		GENERAL LAYOUT PIPE SYSTEM	R.C. Co	19-D-30	214-11
BP		NEW CARD PROCESS FOR TREATING	B.F. Co	19-D-30	214-12
BP PS		PILING & FOOTING PLAN OF TANK HOUSE	H.A.S.	1	214-13
BP PS		PLAN OF FOUNDATION WALLS TANK HOUSE	H.A.S.	2	214-14
BP PS		FLOOR PLAN TANK HOUSE	H.A.S.	3	214-15
BP PS		FRONT ELEVATION TANK HOUSE	H.A.S.	4	214-16
BP PS		REAR " " " "	H.A.S.	5	214-17
BP PS		END " " " "	H.A.S.	6	214-18
T		GENERAL LAYOUT OF DRYING EQUIPMENT ETC.	R.C. Co	19-D-1	214-19
T		GENERAL ASSEMBLY OF EQUIPMENT & STRUCT. STL	R.C. Co	19-D-2	214-20
T		DETAILS OF STRUCTURAL SUPPORT & PIPE HANGER	R.C. Co	19-D-3	214-21
T		GENERAL LAYOUT & DETAILS OF ISULATION	R.C. Co	19-D-4	214-22
T		EJECTOR CONNECTION TO TREATING CYLINDERS	R.C. Co	19-4-2	214-23
PS		CYLINDER FOUNDATIONS w/ SPECS.	F.S. NELSON		214-24
BP		50000 GALLON TANK FOUNDATION	ESN		214-25
BP		TANK FOUNDATION 19-11" ϕ	W.H.W		214-26

TYPE	FILE	TITLE	BY	DRWG #	FILE #
B.P.	OS	FOUNDATION & PILING PLAN TIE MACHIN'G BLDG.	W.H.W.	1	215-1
B.P.	OS	GROUND FLOOR & ROOF PLAN " " "	W.H.W.	2	215-2
B.P.	OS	DETAIL OF WALL GIRDERS " " "	W.H.W.	3	215-3
B.P.	OS	ELEVATIONS & MACHINE FOUNDATIONS " " "	W.H.W.	4	215-4
B.P.	OS	LAYOUT OF TIE ADZER	G.B. Co.	10402PL	215-5
B.P.	OS	PLAN OF TIE MACHINING PLANT	G.B. Co.	1517	215-6
B.P.	OS	FOUNDATION PLAN " " "	G.B. Co.	1518	215-7
B.P.	OS	PROPOSED TIE MACHINING MILL	G.B. Co.	1410	215-8
B.P.	OS	TIE BRANDING MACHINE	G.B. Co.	2832XL	215-9
B.P.	OS	ADJUSTABLE TIE BORING MACHINE	G.B. Co.	676ZNL	215-10
B.P.	OS	ASSEMBLY OF CAM ADJ. PARTS.	G.B. Co.	292ZXL	215-11
B.P.	OS	SECTION "A"- "A" OF 676ZNL-L	G.B. Co.	673ZNL	215-12
B.P.	OS	" " BC-BC " " "	G.B. Co.	675ZNL	215-13
B.P.	OS	" " B-B " " "	G.B. Co.	6732"	215-14
B.P.	OS	SPINDLE GEAR BOX TIE BORING MACHINE	G.B. Co.	15602"	215-15
B.P.	OS	8" GRAVITY CONVEYOR WITH STOP	G.B. Co.	1160"	215-16
B.P.	OS	TIE RAISING DOG ASSEMBLY	G.B. Co.		215-17
B.P.	OS	GEAR BOX PUMP	G.B. Co.	19192NS	215-18
B.P.	OS	LOADING FORM SPRING ATTACHMENT	G.B. Co.	18182NM	215-19
B.P.	OS	ASSEMBLY OF SPINDLE PARTS	G.B. Co.	15162NM	215-20
B.P.	OS	TIE MOVING MECHANISM	G.B. Co.	17282NL	215-21
B.P.	OS	FLOOR PLAN	G.B. Co.	1521	215-22
B.P.	OS	LINE MARKING SAW	G.B. Co.	22972NM	215-23
B.P.	OS	ADZER KNIFE BALANCING STAND	G.B. Co.	10412PL	215-24
B.P.	OS	BILLS OF MATERIAL FOR ADZING & BORING EQUIP.	G.B. Co.	9164	215-25
T.	OS	LAYOUT OF INCISING MACHINE	R.C. Co.	19-5-26	215-26
T.	OS	ARRANGEMENTS OF CONVEYORS TO INCISING MACH.	R.C. Co.	19-5-27	215-27
T.	OS	INCISING MACHINE BUILDING		19-5-28	215-28
T.	OS	DETAILS OF INCISING BUILDING		19-5-29	215-29
B.P.	OS	PIPING DIAGRAM FOR TIMBER INCISING MACHINE	C.B. & S. RR. M.	3399	215-30
B.P.	OS	PROPOSED ADDITION OF TIE & TIMBER CONVEYOR	G.D. Co.	1795	215-31
T.	OS	SKETCH OF WHEEL FOR INCISING MACHINE			215-32
T.	OS	INCISING ROLL HEAD FOR TIMBER INCISING MACH.	R.T. Co.	29-5-33	215-33
T.	OS	DETAILS OF CONVEYORS TO INCISING MACHINE	R.C. Co.	19-5-34	215-34
T.	OS	PRELIMINARY SKETCH LIFT TRUCK HANDLING			
T.	OS	PROPOSED TRACK & ROADWAY FOR A & B MILL			
P.S.	OS	SKETCH SHOWING METHOD OF HANGING DUMP RIG	G.B. Co.	1337	215-35
"	OS	INFEED CONVEYOR		1253ZT	" - 36
"	OS	LAYOUT OF G.E. LIMIT SWITCHES ON ADJ. TYPE ZN TIE BORER WHEN USED WITH HYDRAULIC BRANDER		4424LL	" - 37
"	OS	TRAM CAR DUMPING RIG	G.B. Co.	2322ZNL	" - 38
"	OS	LAYOUT OF TIE DATE BORING UNIT	"	L	" 41
"	OS	ADJUSTABLE TIE ADZING	"	957ZPL	" 42
"	OS	TYPE C-4 DUPLEX PUMP ASSEMBLY	OILGEAR CO.	51897	" 43
"	OS	ADJUSTABLE TIE ADZING MACH.	G.B. Co.	9582PL	" 44
"	OS	PRELIMINARY SKETCH BORING MILL BLDG	W.H. WHEELER AGENT.		" 45
"	OS	DESIGN OF INCISOR ROLL	R.C. Co.	358-5	" 46
"	OS	TIMBER INCISING MACHINE	"	(23-8-5)	" 47
"	OS		"	358-17	" 48
"	OS		"	(23-8-47)	" 49

TYPE FILE		TITLE	BY	DRWG #	FILE #
B.P.	PS	TIE TRAM 24" GAUGE 6'-0" CYL	M.S.C.O.	308	216-1
B.P.	PS	RACK CARS	C.I.W.CO.	6478	216-2
B.P.		TIE TRAM		19-6-3	216-3
B.P.		TRAM CAR DUMPING RIG	G.B.CO.	23227N	216-4
B.P.		CAR HAUL	D.I.W.CO.	11424	216-5
B.P.	PS	CAR PULLER	D.I.W.CO.	10962	216-6
B.P.		TYPE 2 JLC LOCOMOTIVE	F.R.H.CO.	JL-1015	216-7
B.P.		LIST OF PARTS FOR ABOVE ENGINE	F.R.H.CO.	JL-1015	216-8
T		MANHOLE COVER RCX 50-61	R.E.CO.	19-6-9	216-9
T		" " " 66-74	R.E.CO.	19-6-10	216-10
T		" " " 58	R.E.CO.	19-6-11	216-11
T		" " " 65, 68, 69	R.E.CO.	19-6-12	216-12
T		BRONZE TRAM BEARING	R.E.CO.	19-6-13	216-13
PS		TRAM CAR BEARING		C-6035	" -14
"		LEVER ARRANGEMENT FOR CAR HAUL	C.I.WKS.	10964	" -15
"		RACK CARS	"	8858-1	" -16
"		" " "	"	1918-1	" -17
"		DETAIL OF 8" CHILLED CAST IRON WHEEL # AXLE WITH TIMKEN ROLLER BEARINGS FOR TIE & BOLSTER TRAMS, 6' CYLINDER # 24" GA. TRACK	E.B. SHIPLEY	4-661	216-18
PS		DETAIL SHOWING POSITION OF TRAM CAR # BAIL RAIL (AS FABRICATED) IN RELATION TO SMALL RING INSIDE			216-19
PS		HYDRAULIC TIE BRANDING MACHINE	G.B.CO.	78244	" -20

TYPE	FILE	TITLE	BY	DRWG #	FILE #
		BUILDING PLAN	H.A.S.	19-9-1	219-1
	PS	FOOTING "	H.A.S.	19-9-2	219-2
	"	FLOOR "	H.A.S.	19-9-3	219-3
		FLOOR	H.A.S.	19-9-4	219-4
	PS	ELEVATIONS	H.A.S.	19-9-5	219-5
	"	ADDITION TO BLDG: FOOTING PLAN	"	"	" - 6
	"	" " " " FLOOR " "	"	"	" - 7
	"	" " " " ELEVATIONS	"	"	" - 8
BP		BOILER ROOM & STILL UNIT	H.A.S.		219-9

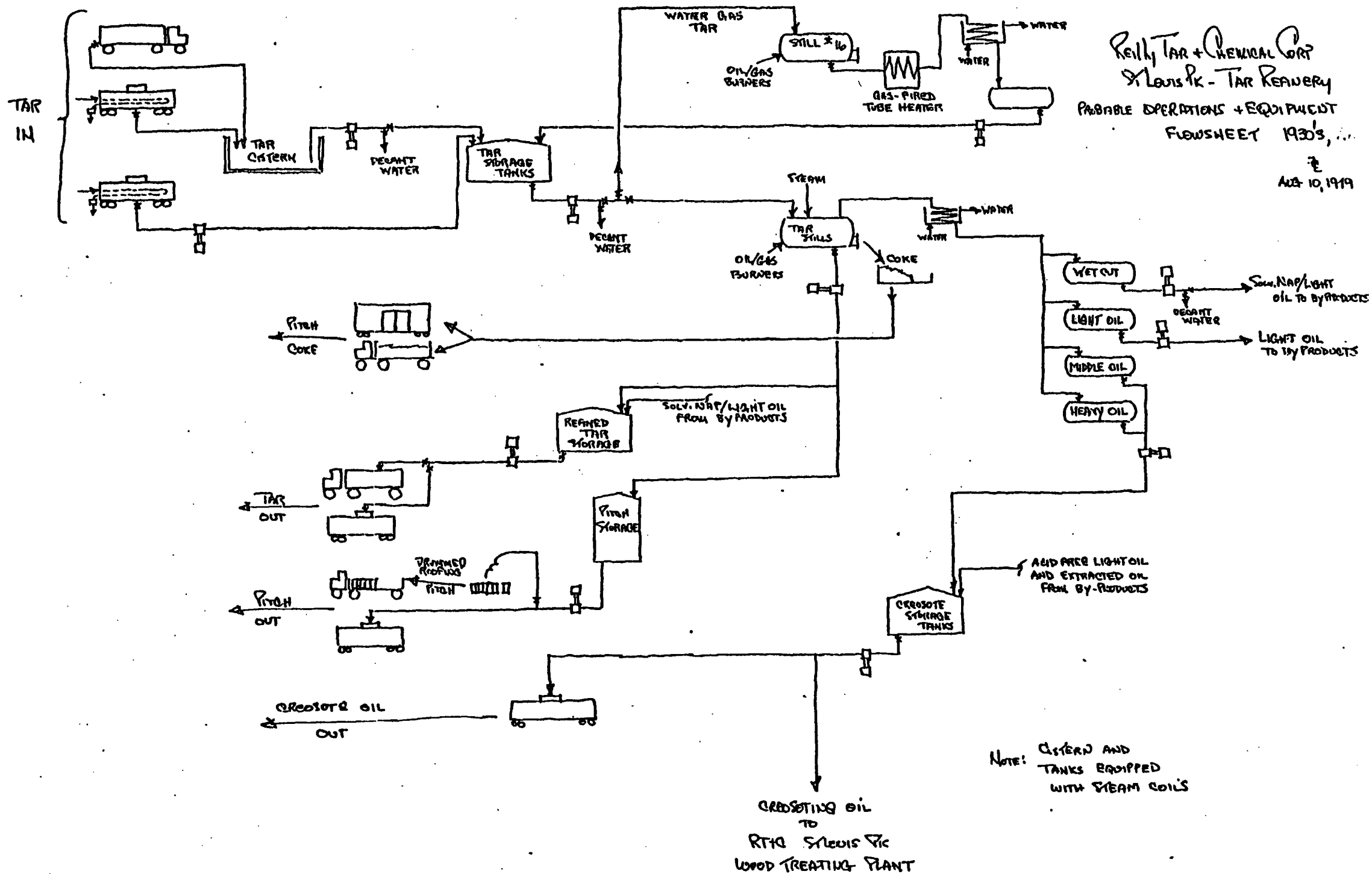
TYPE	FILE	TITLE	BY	DRWG	FILE
BP		90" X 16" STILL	R.C.E.	2	220-1
BP		FLOAT MECHANISM (7' 6" X 14' LONG PITCH TANKS	W.B.B.	8-2308	220-2
BP		SAFETY VALVE INSTALLATION		19-10-3	220-3
BP		MANOMETER PIPING DIAGRAM	R.C.E.	8-D-24	220-4
BP		MANHOLE COVER	R.E.E.	19-10-5	220-5
BP		BATTERY OF STILLS	R.E.C.	1	220-6
T		REFINERY DETAILS	R.E.C.	19-D-24	220-7
T	PS	PROFILE OF COKE TRACKS & DOOR SILLS	R.E.E.	19-D-23	220-8
T		STILL ROOM - PAN ROOM SEAL	R.E.C.	19-10-9	220-9
BP		MANHOLE COVER RELEASE			220-10
BP		" " "			220-11
BP	PS	DUTCH OVENS	R.E.B.	8-D-40	220-12
BP		STILL DAMPERS	R.E.E.	3	220-13
BP		DETAIL OF 12" X 18" DOOR FOR REILLY STILLS	R.E.E.	5-76	220-14
BP		PROPOSED TAR DEHYDRATING TANK	R.E.E.	8-D-48	220-15
BP		MAYWOOD STILL	R.E.E.	8-D-20	220-16
BP		STILL DETAILS	R.T.C.	8581	220-17
PS		STILL DAMPER CONTROL	R.E.E.	19-10-25	220-18
T		ASSEMBLY OF STILL 7'-6" X 16"	R.T.C.	19-10-24	220-19
BP		ARRANGEMENT OF WELDED COKEING STILL (BBSL)	L.I.W.	D-112814	220-20
BP		7'-7" X 16'-1" LG. COKE STILL (CORRECT PRINT.)	L.I.W.	0-14311-4	220-21
T	PS	7'-7" X 16'-1" - REILLY WELDED STILL	R.T.C.	19-10-23	220-22
T		7'-7" X 16'-1" REILLY WELDED STILL (REDRAWN 3-24-55)	R.T.C.		220-23
BP		BATTERY OF STILLS	R.C.C.		220-24

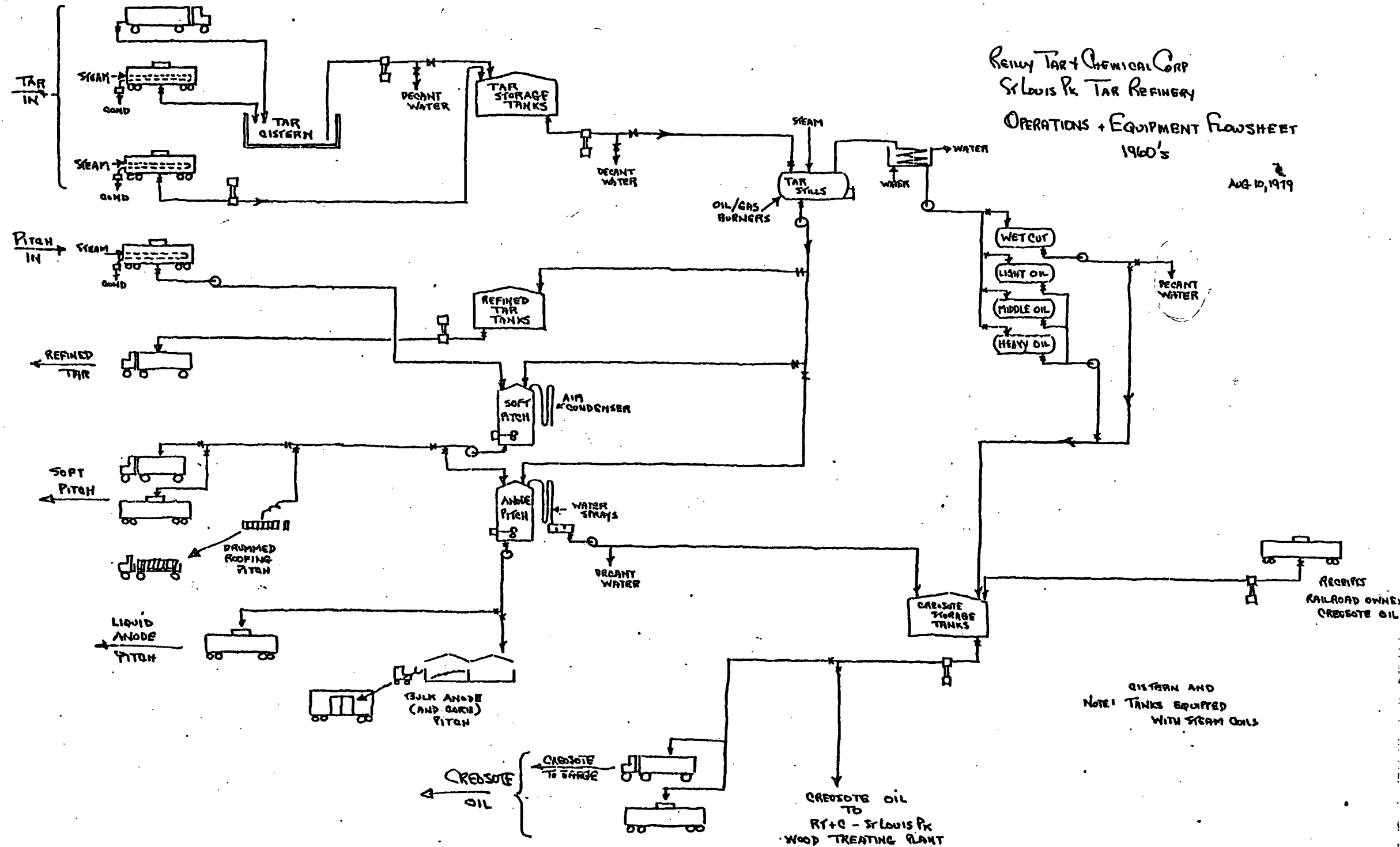
TYPE	FILE	TITLE	By	DRWG	#	FILE
B.P.		NO. 2 F.H. PUMP	I.R. Co.	R.F.H. 87		221-64
B.P.		SECTIONAL ASSEMBLY	I.R. Co.	W-15834		221-55
B.P.		NO. 1 AIR DOOR ASSEMBLY	N.A.B. Co.	R.558		221-52

TYPE	FILE	TITLE	BY	DRWG #	FILE #
T	PS	DETAILS OF NEW STEAM LINE TO REFINERY	R.C.C.	19-D-12	222-1
T	PS	GENERAL LAYOUT & DETAILS OF OVR'H'D STEAM LINE AT	R.C.C.	19-D-13	222-2
T	PS	GENE. LAYOUT & DETAILS & BILL OF MATERIAL " "	R.C.C.	19-D-15	222-3
T	PS	DETAILS OF BEAMS & UPRIGHT SUPPORTS AT B.H.	R.C.C.	19-D-16	222-4
T	PS	" " VARIOUS MEMBERS OF OVR'H'D. AT B.H.	R.C.C.	19-D-17	222-5
T	MISSING	PROPOSED STEAM LINE	R.C.C.	19-A-4	222-6
T	MISSING	DETAILS OF STEEL SUPPORTING FRAMEWORK OVR'H'D	R.C.C.	19-D-14	222-7
BP	PS	GEN'L LAYOUT OF IMPORTANT STEAM LINES AT REF.	R.C.C.	19-12-B	222-8

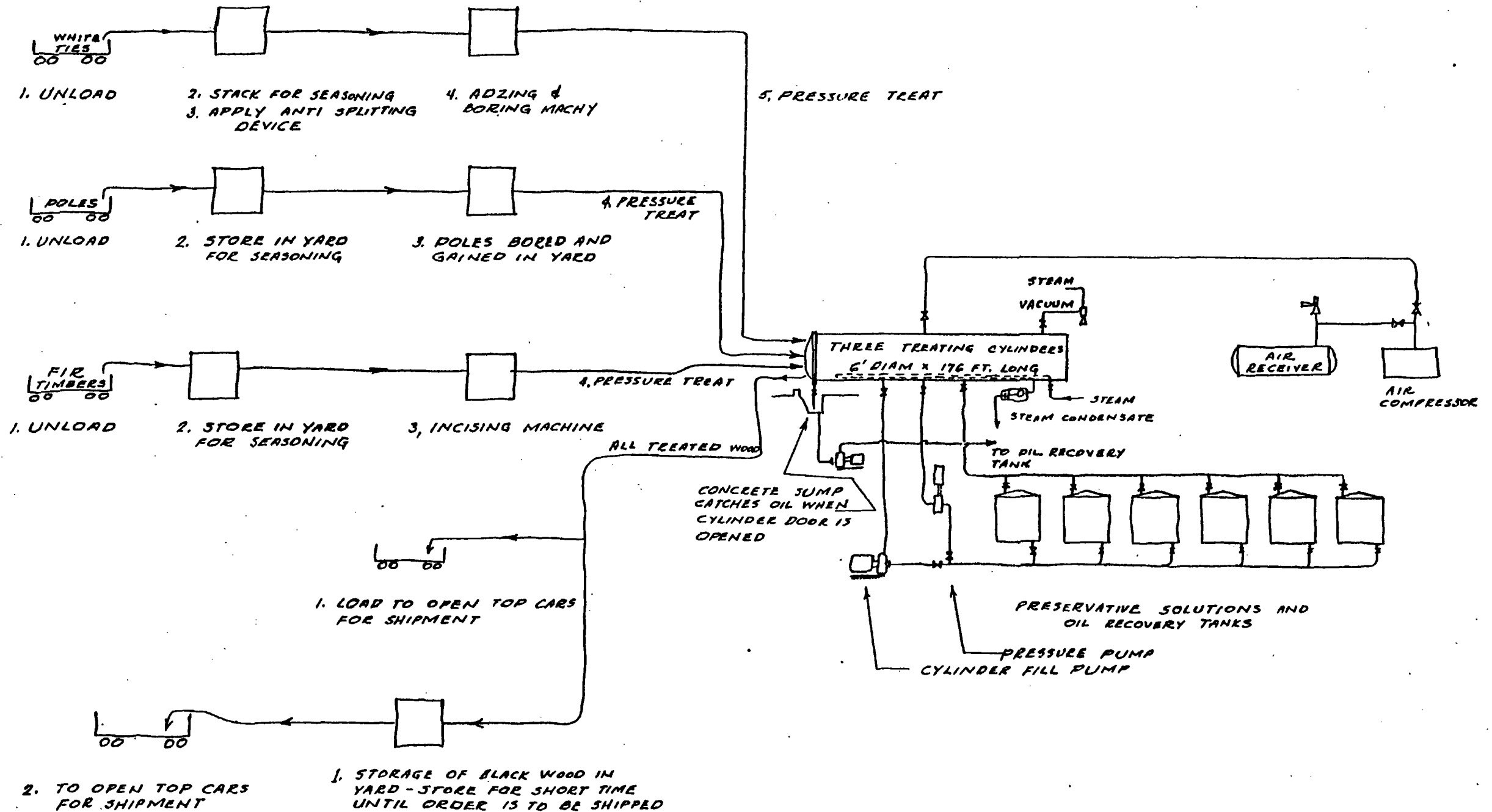
TYPE FILE		TITLE	BY:	DRWG. #	FILE #
(T	PS	PROPOSED CHANGE ROOM	R.C.Co.		225-1
	PS	CHANGE ROOM - REINFORCING PLAN	COWIN & CO.	1	2

TYPE	FILE	TITLE	BY:	DRWG.	FILE #
T	PS	ELEVATED PITCH PANS	R.C.G.		267-1
T	PS	PIPING DETAILS & SUPPORT DATA	" " "		267-2
T	PS	ELECTRIC HEATING POWER & LIGHT	" " "		267-3
T	PS	ELECTRODE PITCH PLANT LAYOUT (8,000-10,000 TON/YEAR)	"		267-4
T	PS	375 TON/DAY			
T	PS	PIPING LAYOUT FOR ELECTRODE PITCH PRODUCTION	" " "		267-5
T	PS	4" CARBON STL. FLUSH BOT. VALVE - MODEL FV	TANK & FILTER CAP.	55711	" - 6
T	PS	RECEIVER PAN VENTILATORS	R.T. & CO.		" - 7
B.P.	B.P.	ELEVATED PITCH PANS	M.T. & M.C.	D-152	" - 8
B.P.	B.P.	" " " DET. OF PITCH DOORS	"	D-153	" - 9
B.P.	B.P.	CONDENSATE PANS REP. CRED. CO. MPLS. MINN.	W.B.B. & MFG. CO.	D-6348	" - 10
B.P.	PS	8 STORAGE TANKS 12'-6" x 28'-3"	S. TANKS B.	1023B	" - 11
B.P.	PS	" " " " "	"	1023A	" - 12
T		3" PITCH LINE FOR TANK CAR LOADING	RT & CH		" - 13





REILLY TAR & CHEMICAL CORP
ST. LOUIS PARK TAR REFINERY
OPERATIONS + EQUIPMENT FLOWSHEET
1960's
AUG 10, 1979



REILLY TAR AND CHEMICAL CORP.
 FLOW SHEET - TIMBER CREOSOTING
 OPERATION - ST. LOUIS PARK, MINN.

INTER-OFFICE CORRESPONDENCE
REILLY TAR & CHEMICAL CORPORATION

TO:

FROM: William R. Roder

OFFICE: Lab

DATE: May 2, 1979

SUBJECT: TRIAL PREPARATION:
HISTORY OF WELLS IN THE ST. LOUIS PARK AREA

Wells on the Plant Site:

Thirteen wells were on the plant site at time of purchase from the Minnesota Sugar Beet Co.

Twelve of the wells were shallow.⁽¹⁾ Attempts to use these shallow wells were unsuccessful, due to clogging of the well screens with sand and silt.⁽²⁾ Reports have placed the depth of the shallow wells at 50-60 ft.⁽³⁾ and from 100-200 ft.⁽⁴⁾ Based on the clogging information the wells are probably located in the middle and lower drift Aquifers (80 ft.) and not in the St. Peter sandstone; if the wells were 100-200 ft. deep.

The middle drift aquifer is a silt and clay formation, while the lower drift contains some sand. The St. Peter sandstone is a light yellow to white, well sorted quartzose sandstone.

One deep well was on the site. It was drilled in 1898 to a depth of 866 ft. to the Mt. Simon-Hinckley sandstone (a medium to coarse grained sandstone).⁽⁵⁾ The deep well was located in the southeast corner of the plant site 600 ft. from the pump house.⁽⁶⁾ The well had a 16" casing to 58 ft., 12" casing to 100 ft., and a 10" casing to 150 ft. was added in 1917. The well was plugged and sealed about 1933 on the advice of the McCarthy Well Co., in belief this would eliminate the problem the city of St. Louis Park was having with the taste of the water from their newly drilled well.⁽⁷⁾

An additional deep well was drilled 909 ft. into the Mt. Simon-Hinckley sandstone by the McCarthy Well Co. in 1918, close to the pump house. The well was cased with a 12" casing to 65 ft.⁽⁸⁾ In 1933 a 10" casing was added to a depth of 73 ft., an 8" casing to 260 ft. and a 4 1/2" casing to 373 ft., again on the advice of the McCarthy Well Co.⁽⁹⁾

The site well water was analyzed by Mr. T. E. Courtney of Reilly Labs, for phenol content, in May 1933, using the Gibb Method: The phenol concentrations were as follows:⁽¹⁰⁾

well with casing to only 65 ft. = 0.050 ppm
well with casing to 373 ft. = 0.020 ppm
water from peat bog N.W. of site = 0.010 ppm
Maywood boiler feed water = 0.040 ppm

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(2) HISTORY OF WELLS

The well water was reanalyzed by Mr. Courtney in June, 1933. The phenol content was 0.030 ppm.⁽¹¹⁾

The 0.010 ppm phenol concentration of the peat bog located northwest of the plant site indicates another source of phenol contamination, to the northwest of the plant site. Since the drainage of the area is to the south and east thru the plant site.⁽¹²⁾

The Chapin method was used in Nov., 1938 to determine the phenol concentration of the site well; no phenol was detected.⁽¹³⁾ This well water had 352 ppm total solids.

A letter written by Mr. McLellan in 1940 indicates the site well water was never used for drinking purposes due to taste and odor.⁽¹⁴⁾

A new hydro-pneumatic pumping system was installed in the well in 1955.⁽¹⁵⁾ Tarry material caused this pump to fail in 1958. The plant personnel were of the opinion the well had become contaminated with tar to the 226 ft. level. Therefore, a packer was placed inside the 8" casing to a depth of 260 ft.⁽¹⁶⁾ I could not determine the status of the site well after 1958 with the information I have available. Except, the plant office and showers were hooked up to city water in the early 1960's.⁽¹⁷⁾

The site well was opened in 1977 by the Barr Engineering Co. for testing. A tarry material was on the pipe to 40 ft. below the well head.⁽¹⁸⁾

The following phenol determinations have been made on the site well water over the years.⁽¹⁹⁾

Year	Lab.	Method	Phenol PPM
1933	Reilly	Gibb	0.020 - 0.050
1938	Reilly	Chapin	0.000
1968	Twin City Testing	Unk.	0.020
1977	Serco Labs	4-Aminianitipyrine	
After 1 minute of pumping 100 gpm			0.020
" 15 "	" " "	"	0.011
" 30 "	" " "	"	0.008
" 100 "	" " "	"	0.005

The above phenol determinations indicate the phenol content of the site well water has remained constant over the years; since the coal tar creosoting operation began. The phenol content is above the allowable federal limits of 0.001 ppm phenol for drinking water. But, apparently the site well water always has been since the water was never used for drinking purposes.

According to the Barr Engineering Report, the Mt. Simon-Hinckley formation is isolated

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TRIAL PREP.
HISTORY OF WELLS

from the prairie du Chien-Jordan aquifer, except for recharge thru wells that provide a direct pathway between the Mt. Simon-Hinckley and the upper aquifer. (20) Therefore, if the site well was a direct pathway for contamination to the Mt. Simon-Hinckley aquifer, why didn't the phenol concentration of the site well water increase over the years?

City of St. Louis Park Municipal Wells

Available information indicates the City started drilling for their water supply in the early 1930's.

The first complaint from the city was in 1933, when a well drilled southeast of the plant site (6021 W. 36th St.) had a swampy taste. The well was originally drilled to a depth of 393 ft. (Jordan formation) and cased the entire depth. The well was extended another 150 ft. to the St. Lawrence sandstone. The taste was not eliminated and a trace of phenol was reported. (21) This was when the McCarthy Well Co. advised the plant manager to seal the old deep well and case the 909 ft. well to 373 ft. The City well water was approved by the State Sanitation Dept. and used for a short period. (22) The well was also in service in 1938. (23) The well water was analyzed by E. A. Hickok Assoc. in 1969. The phenol content was 0.012 ppm. (24)

The city draws its water from the St. Peter, Jordan and Hinckley aquifers. A 1969 E. A. Hickok and Assoc. report indicated water from the Jordan and Hinckley formations to be less than 0.005 ppm. (25)

The following phenol concentrations have been reported over the years on the following city wells. (26)

ST. LOUIS PARK MUNICIPAL WELLS

WELL #	GEO. FORMATION	LOCATION FR. PLANT SITE	Phenol PPM						
			1946	1947	1948	1968	1969	1974	1977
1. 2936 Idaho Ave.	St. Peter	N	-	-	-	-	0.014	<0.002-0.035	-
3. 2924 Idaho Ave.	St. Peter	N	-	-	-	0.002	0.012	-	-
4. W. 41st & Natchey	Jordan	SE	0.100	-	0.005-0.070	0.008	0.014	-	-
5. Wyo & 34th St.	Jordan	W	0.020	-	-	-	0.014	-	-
6. W. 42nd & Zarthan	Jordan	S	-	0.007	0.015	0.0025	0.023	-	-
0. 29th & Jersey	Jordan	N	-	-	-	-	0.014	<0.002-0.013	<0.002-0.013
1. 29th & Idaho	Hinckley	N	-	-	-	0.000	trace	-	-
2. 42nd & Zarthan	Hinckley	S	-	-	-	0.000	0.018	-	-
3. Cedar Lake Rd. & Ala.	Hinckley	NE	-	-	-	0.000	0.018	-	-
4. Cedar Lake Rd. & Ala.	Jordan	NE	-	-	-	0.000	0.009	-	-

REILLY TAR & CHEMICAL CORP. ACTION

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HISTORY OF WELLS

The phenol concentration of the city wells were determined to be less than 0.005 ppm by the Minnesota Dept. of Health on April 16, 1970.⁽²⁷⁾

The above data shows no indication that the city's wells have become contaminated over the years. The upper aquifers appear to have no higher phenol content than the lower aquifers, and I find little evidence from this data that the wells to the south and east of the plant site are higher in phenol than the wells to the north or west.

However, according to the Barr Engineering Report, their information was not sufficient to explain the reason for the phenolic contamination of the city's St. Peter and Jordan wells located in the city's well field north of the Plant Site. Since their calculated flow time through the aquitards are on the order of 55 year through the siltstone stratum of the St. Peter and at least 34,000 years through the various aquitards between the Jordan and the Mt. Simon-Hinckley, thus under the assumed permeabilities and gradients it seems unlikely that the coal tar derivatives that are known to be present at the base of the glacial drift and in the platteville limestone could have traveled to the Prairie du Chien-Jordan through the siltstone stratum of the St. Peter, or to the Mt. Simon-Hinckley through the Eau Claire.⁽²⁸⁾ However, the water level gradients are sufficient to transmit seepage from uncased wells to the City's wells in the St. Peter Aquifer. However, not enough time has elapsed for this to be ⁽²⁹⁾ the source of phenol in the city's St. Peter wells.

In the case of contamination of the city's Jordan wells, the computed water gradients indicate ground water could not be transmitted from the plant site to the City's Jordan well field north of the plant site.⁽³⁰⁾

The Barr Report, also, stated the phenol concentration in the Mt. Simon-Hinckley wells on the plant site and the city well field could be attributed to movement of coal tar derivatives from the Mt. Simon-Hinckley well on the site to the City's Mt. Simon-Hinckley wells.⁽³¹⁾ If this is the case why isn't the phenol concentration higher in the Mt. Simon-Hinckley aquifer, due to the direct pathway for contamination?

One attempt to explain the phenol concentration in the city's wells to the north of the plant site was by high volume pumping of the wells north of the site creates a cone of depression around the wells and corresponding a local reversal in the direction of ground water flow occur.⁽³²⁾ However, the observed movement of ground

REILLY .AR & CHEMICAL CORPORATION
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TRIAL PREP.
HISTORY OF WELLS

water in the St. Louis Park Area is in a southeasterly direction. (33)

Why, could not one explanation be that the phenol contamination, also have come from some source north or west of the plant site before the creosoting operation begun. Phenol Concentrations of 0.010 ppm^(10,12) were found in a peat bog Northwest of the plant in 1933 and the plant site water has never been suitable for drinking. The time element of 55 years through the siltstone of the St. Peter could be explained, plus the reason for phenol in the city's well field to the north.

Polynuclear Aromatic hydrocarbons have also been reported in the city's well water. In 1977 the Barr Report showed no PNA in City Well #3 at detection limits of 0.030 ppm. However, a 1978 Minnesota Dept. of Health Report on PNA in the St. Louis Park drinking water reported the following wells should be abandoned due to high PNA concentrations. (3)

Well #	and Location	Direction Fr. Plant Site	Geo. Formation	1978	1969
				PNA ppm	Phenol PPM
7	2500 Louisiana Ave.	North	Jordan	0.000139	0.013
9	"	North	"	0.000248	0.013
10	29th & Jersey Ave.	North	"	0.001363	0.014
15	"	North	"	0.001924	-

All the city wells were tested and only wells 10 and 15 exceed the allowable limits for PNAs in drinking water. All the wells with high PNA concentrations were in the Jordan aquifer and to the north of the plant site.

Again, why not explore a source of contamination to the north or west of the plant site before 1900. We found phenol north and west in 1933, the time element can be explained, through the St. Peter and this could be the reason the Jordan Wells to the north are contaminated, with phenol & PNA. Since the Barr Engineering report states the Jordan wells north of the plant site, could not be contaminated with phenols from the plant sites ground water. (36)

Residential and Commercial Wells in the St. Louis Park Area

The first written complaint by a resident in the plant site vicinity due to a phenol taste in their well water occurred in 1938.

The Minnesota Dept. of Health in 1938 sampled and analyzed for phenol, two residential wells and one commercial well. All located east of the plant site. (37)

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HISTORY OF WELLS

Location of Well	Geo. Formation	Phenol PPM
3363 Brownlow	lower drift	0.221
3355 Brownlow	"	12.30
Hedberg-Friedheim Gravel Pit	Jordan	0.00818

The commercial well was drilled originally to the St. Peter and no tarry taste present, however, after extending the well to the Jordan, a tarry phenolic taste was observed. (38)

The Prestilite Co. also had a 300 ft. well (Prairie du Chien formation) with a phenolic taste to the water. They were reported to be able to remove the taste with some type of filter. (39)

In 1940 a Mr. E. D. Jones filed a complaint with the plant that his well water had an obnoxious taste, due to our coal tar operations. The Jones well was located at 3320 Louisiana Ave. on the hill east of the plant site. The depth of the Jones well was 85 ft. Two employees at the time, Ed Weiner and Frank Williams, neighbors of Jones, indicated they had to abandon their wells, along with others in the area over the last 10 years (1930-1940). (40)

Ole Peterson, the creosoting foreman at the time, stated wells in the area had had the phenolic taste and odor before Reilly purchased the plant site. Jim Smith of Mpls. Gas and Light back up Mr. Peterson's statement. (41)

All the wells were sampled and analyzed by the State Board of Health, and were passed as safe. (42)

Most of the residential and commercial wells in the area which were drilled to the Platteville have now been abandoned. (43)

Phenol analysis of various residential and commercial wells in the area over the years have been tabulated. (44)

RESIDENTIAL AND COMMERCIAL WELLS

Well No. & Location	Geo. Formation	Direction of Site	Phenol PPM					
			1938	1968	1969	1974	1976	1977
111 Co. & Location	Jordan	E	0.00818	-	-			
ume Ind. Lake St. & Taft	Prairie du Chein	S	-	-	0.028	0.002-0.004	0.002	0.002-0.03
Court Plasl. 27th W. of La.	St. Peter	E			0.023			
1. 36th Brunswidk	Prairie du Chein	SE		0.008	0.020	<0.002-0.007	<0.002	
	St. Peter	SE				1.0 - 1.4	0.14-0.17	0.390
erilized Diaper	Jordan	E					<0.002	
nesota Rubber	Jordan	SE				<0.002-0.009	<0.002	
edick Grain	Jordan	E				<0.002-.017	<0.002	
thodist Hospital	Jordan	SE					<0.002	
etman's 3700 Colorado Dr.	St. Peter	SE					<0.002	
53 Brownlow	lowerdrift	E	0.221					
55 Brownlow	"	E	12.3					

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(9)

HISTORY OF WELLS

Only the Midco Register Co., formerly Robinson Rubber Co. had a phenol content considerably higher than found in any of the city wells or commercial wells. Again the well is located in the St. Peter and contamination would have to be by a direct pathway to the St. Peter aquitard.⁽⁴⁵⁾ Could the well have been contaminated by the former owner, the Robinson Rubber Co. One commercial well has been analyzed for PNA's, the Flame Industry well located south of the plant site at Lake St. and Taft Ave. The well is drilled to the Prairie du Chien aquitard, and no PNA's were detected with a detection limit of 0.03 ppm.⁽⁴⁶⁾

Monitoring Wells:

Monitoring wells were drilled by the Barr Engineering Co. for their investigation of the area.

The following phenolic concentrations were obtained.⁽⁴⁷⁾

Monitoring Well #	Formation	Direction Fr. Plant Site	Phenol PPM	
			1976	1977
W-1	Platteville	NE	<0.002	<0.002
W-2	Middle Drift	N	<0.002	<0.002
W-3	Middle Drift	N on Site	<0.002	-
W-5	Middle Drift	SE Corner Site	0.153	0.035-0.022
W-6	"	SW Corner Site	0.043	0.050-0.19
W-7	"	West	<0.002	
W-8	"	South	<0.002	<0.002
W-9	Middle Drift	SE	3.00	1.10-0.60
W-10	"	SE	0.002-0.004	-
W-11	"		0.004-0.023	-
W-12	"	SE	0.014	-
W-13	"	SE	-	56-4.8
W-14	St. Peter	SE	-	<0.0068-0.002
W-15	Lower drift	SW Corner Site	-	0.028-0.037
W-16	Lower drift	S		0.002-0.004
W-17	Lower drift	SE		0.340-0.032

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HISTORY OF WELLS

(11)

The monitoring well data does indicate the higher phenol content is in the south east corner of the plant site and across the property line to the southeast between Walker and Lake St., with the higher concentration in the glacial drift.

Monitoring wells 9,13,14 and 17 were analyzed for PNA's. No PNA's were reported in well 14 at detection limits of 0.03 ppm. Well 17 had a PNA concentration of 1.7 ppm. (48)

Well 17 is located the farthest from the plant site approximately (1000 ft.) and drilled into the lower drift. Why, it has a higher PNA concentration than wells 9 and 13 which are closer to the plant site and drilled only to the middle drift was not explained. Well 14 is in the same area, but drilled to the St. Peter.

Other Wells

The following is a list of other reported wells in the St. Louis Park and plant site area. No phenol or PNA determinations have been made on these wells. (49)

Wells identified by Sunde (1974) in his survey of well logs, but not located in the Barr Engineering field survey: (47)

Milwaukee Rd.	Hinckley	cased to 1st bedrock
3612 Alabama	St. Peter	"
Strom Block Co.	"	"
Strom Block Co.	Jordan	cased to the St. Peter
Black Top Service Co.	"	"
		and may be sealed

Wells not identified by Sunde in 1974 survey, but located during field survey:		
Mill City Plywood	lower drift	tarry taste, no
Lakeland Door Co.	Platteville	no tarry taste, not in use
Ace Mfr. Co. 3825 Edgewood	No log available	
Hartman Well 3700 Colorado	160 ft.	no smell or taste
Methodist Hospital	St. Lawrence	Cased to Jordan

Wells for which logs were found, but had not been previously reported.		
Rogers 7401 Walker St.	St. Peter	Cased to Platteville
Lake Land Door Co.	Platteville	
Terry Excavating 3326 Republic	112 ft.	Cased to 1st bedrock

This report was based on information gathered from correspondence between the Republic Creosoting plant at St. Louis Park, Minn. and the main office of Reilly Tar and Chemical. Correspondence between the above offices and the City of St. Louis Park and various offices of the State of Minnesota. Plus the following reports to

REILLY TAR & CHEMICAL CORPORATION

(12)

TRIAL PREP.
HISTORY OF WELLS

the MPCA:

Barr Engineering Report June, 1977

Eugene A. Hickok & Associates Report "Ground Water Investigation Program at

St. Louis Park, Minn. progress Report 1.

Sept. 1969

Minn. Dept. of Health - Division of Environmental Health Section of Health Risk
Assessment" Health Implications of Polynuclear Aromatic
Hydrocarbons in St. Louis Park Drinking Water. Nov. 1978

Very truly yours,

William R. Roder

REILLY TAR & CHEMICAL CORPORATION

TRIAL PREP.
HISTORY OF WELLS

(13)

References and Documentation Used in Report

1. 1x 17-10-29 A. E. Larkin
2. 1x 17-11-3 A. E. Larkin
3. 1x 17-11-3 " "
4. 1x 17-9-5 " "
5. 1x 17-10-5 " "
6. 1x 17-10-16 " "
7. 1x 33-4-4 " "
- 1x 34-3-26 W. J. McLellan
8. 1x 17-10-29 A. E. Larkin
- 1x 17-11-5 A. E. Larkin
- 1x 17-11-13 " "
- 1x 17-11-26 McCarthy Well Co.
- 1x 17-12-10 A. E. Larkin
9. 1x 33-4-4 " "
- 1x 33-4-8 " "
- 1x 33-5-10 R. L. Rademacher
10. 1x 33-5-23 T. E. Courtney
11. 1x 33-6-22 " "
12. 1x 33-5-18 R. L. Rademacher
13. 1x 38-11-18 T. E. Courtney
14. 1x 40-10-14 W. J. McLellan
15. 1x 55-4-28 H. L. Holstrom
16. 1x 58-3-5 H. L. Holstrom
17. 1x 62-7-18 H. L. Finch
18. Barr Engineering Report 1977-6 page III-34
19. 1x 33-5-23 T. E. Courtney
- 1x 38-11-18 " "
- 1x 68-6-24 Twin City Testing Lab.
- Barr Engineering Report 1977-6 page III-34
20. Barr Engineering Report 1977-6 page IV-19
21. 1x 33-4-4 A. E. Larkin
22. 1x 33-7-12 R. L. Rademacher
23. 1x 38-6-3 A. E. Larkin
24. E. A. Hickok & Associate Report 1969-9 page 5
25. E. A. Hickok & Associate Report 1969-9 page 17
26. E. A. Hickok & Associate Report 1969-9 pages 5-6
- Barr Engineering Report 1977-6 table #6
27. MCPA Report 439 1970-4 page 2
28. Barr Engineering Report 1971 -6 page IV 20
29. Barr Engineering Report 1971 -6 page VII 3-4
30. " " " " " "
31. " " " " " "
32. E. A. Hickok & Assoc. Report 1969-9 page 13
33. Barr Engineering Report 1977-6 page VII-1
34. " " " " page III 33-34
35. Minnesota Dept. of Health "Health Implications of Poly nuclear Aromatic Hydrocarbons in St. Louis Park Drinking Water" 1978-11 Table I

REILLY TAR & CHEMICAL CORPORATION

TRIAL PREP
HISTORY OF WELLS

(14)

36. Barr Engineering Report 1977-6 page VII 3-4
37. Minn. Dept. of Health Division of Sanitation Report or Investigation of Disposal of Wastes at the Republic Creosoting E. St. Louis Park, Minn. 1938-5
38. Same as 37
39. " " "
40. lx 40-10-14 W. J. McLellan
41. lx 40-10-14 " "
42. lx 40-10-14 " "
43. E. A. Hickok and Assoc. Report 1969-9 page 17
44. Same as 37
E. A. Hickok & Assoc. Report 1969-9 Table I & II
Barr Engineering Report 1977-6 table #7
45. " " " " page IV - 15
46. " " " " page III 33-34
47. " " " " table #5
48. Barr Engineering Report 1977-6 page III 33-34
49. " " " " page III 22-24
Sample: lx 17-10-29 A. E. Larkin
lx = Reilly Tar & Chem. Co. correspondence
17 = year 1917
10 = month
29 = day
A. E. Larkin writer.

WR/jr

TYPE	FILE	TITLE	BY	DRWG	#	FILE #
T	✓	WATER COOLING FOR PANS	P.T. & C. Co.			270-1
T		CYCLES/HOUR - 3700 GAL. TK & 175 G.P.M. PUMP				-2

TYPE FILE
T

TITLE
GAS PIPING & PANELBOARD - RILEY BOILER

BY
RT&CH

DEWG. #

FILE #
271-1

272

TYPE	FILE	TITLE	BY	DRWS	FILE #
T	PS	FEEDWATER HEATER PIPING	RTJCH		272-1

TYPE	FILE	TITLE	BY	DRWG. NO.	FILE NO.
T		SEE DRWG 267-1 (PAN. EXTENSION)	RTSCH		273-1

STATIC BAY ADDITION TO ELEC. PLANT

TYPE	TITLE	BY	DRWG.	FILE #
T	PRELIMINARY LAYOUT	RTJCH	282-1	OBS.
T PS	LAYOUT #2 STATIC BAY ADDITION TO E.P. PLANT	"	" - 2	OBS
T PS	LAYOUT #3 ADDITION TO PITCHPANS CAP. 21,643 ^{TON/YR}	"	" - 3	OBS
T	Flowsheet - ADDITION TO ELECTRODE PITCH PLANT LAYOUT #2	"	" - 4	OBS
T	" " " " LAYOUT #3	"	" - 5	OBS
T PS	LAYOUT #4 STATIC BAY ADDITION TO E.P. PLANT	"	" - 6	OBS
T PH	15'x19' PITCH COOLER TANK	"	" - 7	
T PH	15'x19' INSULATED PITCH STORAGE TANK	"	" - 8	
T PH	FOUND. & STRUCTURAL STEEL FOR PITCH COOLER & STORAGE	"	" - 9	
T PH	LAYOUT #5 ADDITION TO ELECTRODE PITCH PLANT	"	" - 10	OBS
T PH	ELECTRODE PITCH BAY	"	" - 11	
T PH	PIPING LAYOUT AND DETAILS.	"	" - 12	
T PH	POLE BARN FOR PITCH PAN	"	" - 13	
T PH	PITCH PAN AND DETAILS.	"	" - 14	
T PH	LAYOUT #6 ADDITION TO ELECTRODE PITCH PLANT	"	" - 15	
T PH	Flowsheet #6	"	" - 16	
T PH	ELECTRODE PITCH PLANT PIPING DETAILS.	"	" - 17	
T PH	" " " " ELECTRICAL LAYOUT.	"	" - 18	
BP PH	STD. G. 12" BELT LOADER & 18" TYPE "H" CHUTE	MANIERRE	" - 19	G-147
" PH	24x24 SINGLE ROLLER CRUSHER ASSEMBLY	THE JEFFREY MEQ. C.	" - 20	X.H. 219

TYPE	FILE	TITLE	BY	DRWG #	FILE #
T		PRELIMINARY: OVERHEAD STEAM LINE TO TANK FARM	RT & CH.		286-1
T		NEW STEAM LINE	"		286-2

Type File

ITLE

By

Date

File

T

INSTALLATION OF COOLER FOR BLEND TANK.

RTCH

289-1

291

T 15 NEW 4" GAS LINE

RT&CH

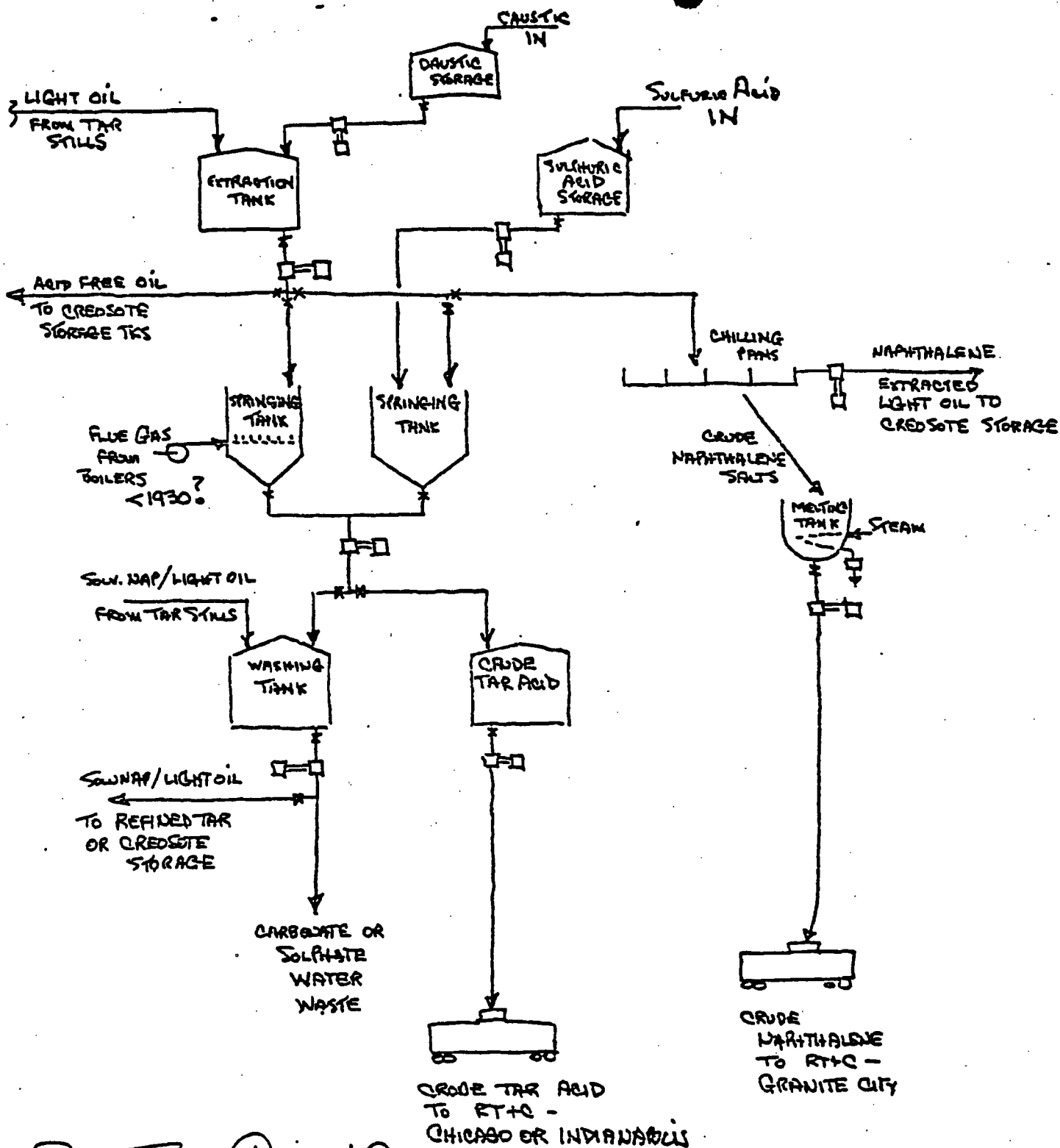
291-1

TYPE	NO.	TITLE	STILL BY	DATE	NO.
T	PS	CONVERSION OF STILLS 13, 14, 15 & 16 TO FIRE TUBE RT & CH	RT & CH	298-1	
T	PS	STILL SUPPORTS, PORTS	RT & CH	298-22	
T		ANCHOR BOLT LAYOUT	RT & CH	298-3	
T	PS	ELECTRICAL LAYOUT	RT & CH	298-4	
T	PS	TUBE STILLS 13, 14, 15 & 16 R.P.M.	RT & CH	298-5	
T	PS	STILL PLATFORM R.M.	RT & CH	298-6	
T		TANK RICE CHARGES & TANK FOUNDATIONS	" "	298-7	
T		OIL CONVERSION CHARGE MEMBER	" "	298-8	
T		TEMPERARY RYCH CONNECTION.			

TYPE	TITLE	BY	SEAL	FILE #
T	MILL LOCATION <u>ORANGE</u>			239A1
T	MILL LOCATION	RTICH.		239A2
T	MILL CONVEYORS (DESIGN DRWG.)	"		-3
T	PILING LAYOUT & DETAILS	"		-4
T	MILL CONVEYOR DETAILS	"		-5
T	LIFT OFF DETAIL CHAIN	"		-6
T	Mill Conveyor Assembly	"		-7
T	PILING LAYOUT & CONCRETE LIFT INCISOR	"	P	-8
T	LIFT OFF DETAILS HYDRAULIC	"		-9
T	INCISOR INSTALLATION (DESIGN DR)	"		-10
T	WOOD INCISOR	ET 24		-12
T	WOOD FRAMING DETAIL	ET 24		-13
T	FIG 4-21 DETAILS DRW. 239A12	ET 24		-14
T	FIG 22-27 & FIG 36-US DETAIL DRW 239A-12	"		-15
T	FIG 68-35 & FIG 49 DETAIL DRW 239A-12	ET 24		-16
T	JNT PLATE STEEL WORK	ET 24		-17
T	OPERATING SHOE FOR LIMIT SWITCH	ET 24		-18
T	STEEL DETAIL	ET 24		-19
T	ELECTRICAL & HYDRAULIC	ET 24		-20
SP	ELECTRICAL	REC		-21
	PRIMARY DISTRIBUTION	REC		-22
	GENERAL DESIGN	REC		-23
	INCISOR 26 x 32 SIDE ELL	GENERAL	571204	-24
	" " SEC THRU VERTICAL RAILS	"	571204	-25
	" " OUT FEED VERTICAL	"	571204	-26
	" " IN FEED CONVEYOR	"	117204	-27
	" " OUT FEED CONVEYOR	"	1204	-28
	" " ROLL OFF	"	771204	-29
	" " " "	"	771204-C	-30
	" " TIE FEED LOSS	"	120426-21	-31
	" " HORIZONTAL ROLL PILE	"	271204	-32
	" " VERTICAL	"	271204	-33
	" " NAT. TO. TIE THE DRIVING POINT	"	1940	-34

225E

TYPE	FILE	TITLE	BY	DATE	FILE #
T		COMPRESSOR FOUNDATION	RCC		225B-



Reilly Tar + Chemical Corp
 Louisville Tar Refinery By Products Dept
 PROBABLE FLOWSHEET 1920's - 1930's

Aug 10, 1917

NOTE: TANKS EQUIPPED
 w/ STEAM COILS

10/28/69

10/28/69

City had a hydrologist firm studying city water. Gene Nicholas Report

- a) Hydrologist preliminary report received by City Mgr + Mr. Phee health officer
- b) Report states that Phenol concentration of all wells in St Louis Park have over the desirable limit. Claim was made that all wells have a higher phenol content than the well they closed down quite a number of years ago.
- c) The preliminary report may not be made public before the election.

Suggestion

221167

Phenol
.001

drinking

Meeting with Chesapeake } City
M^{rs} P. H. }
Justice.

Gene Piekoski W. H. H. H.
Explains his findings

Surface output has to stop.

Virginia Water Shed District
(Don Righam, Chairman)

Pollution Control Agency

To a point we could clean water
on street

Should we

Set up a reaction on our problem
with council and with inst. To see
what steps we will take.

221168